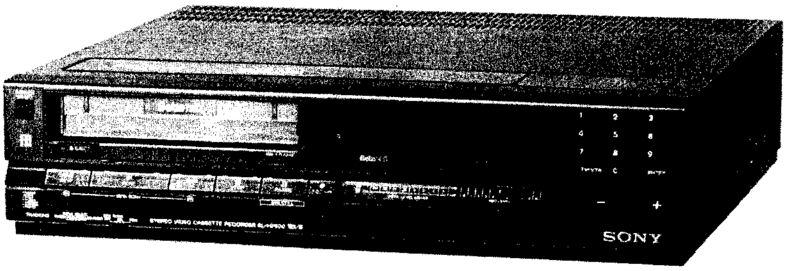
SL-HF600
RMT-133

SERVICE MANUAL

US Model
Canadian Model
PX Model



Super Beta hi-fi
711B2 CHASSIS

May,1985

This manual contains the Adjustment method.

SPECIFICATIONS

System

Video recording system	Rotary two-head helical scanning
Audio recording system	Beta hi-fi system (2 channels) (Recording on the conventional audio track is monaural.)
Video signal	EIA standard, NTSC color
Usable cassettes	Cassettes having the mark β βIII: 1.33 cm/sec. βII: 2.0 cm/sec. βI : 4.0 cm/sec. (only for playback)
Maximum recording time	βIII: 5 hours βII: 3 hours 20 min. (with sony L-830 cassette)
Fast-forward and rewind time	Approx. 3½ min.(L-500)
Audio frequency response	Beta hi-fi OFF βII:50–10,000 Hz βIII: 50–7,000 Hz Beta hi-fi MPX FILTER OFF βII, βIII: 20–20,000 Hz
Wow and flutter	Beta hi-fi ON Less than 0.005% WRMS
Dynamic range	Beta hi-fi ON More than 80 dB

Tuner section

Channel coverage	VHF channels 2 to 13 UHF channels 14 to 69 Cable TV channels 1 to 125
VHF output signal	Channel 3 or 4 (selected) 75 ohms, unbalanced
Antenna	75-ohm antenna terminal for VHF and UHF

Inputs and outputs

Video input	Phono jack (1) 1 V p-p ±0.5 V p-p, 75 ohms, unbalanced, sync negative
Video output	Phono jack (1) 1 V p-p ±0.5 V p-p, 75 ohms, unbalanced, sync negative
Audio input	Phono jack (2) −10 dBs (0 dBs = 0.775 V rms), more than 47 k ohms
Audio output	Phono jack (2) −10 dBs (at load impedance 47 k ohms) more than 10 k ohms
Control S input	Minijack (1)

– Continued on next page –

Beta
# β VIDEO CASSETTE RECORDER
SONY®

MICROFILM

Consumer VIDEO

Timer section

Clock	Synchronized with the power frequency
Time indication	12-hour cycle
Timer setting	Only to start and stop recording 6 programs can be set over 7 days, or every week

General

Power requirements	**US, Canadian models:** 120V ac ±10%, 50/60 Hz ±0.5% **PX model:** 100, 120, 220 or 240 V ac ±10%, 50/60 Hz ±0.5%
Power consumption	44 W
AC outlet	Unswitched max. 400 W
Operating temperature	5°C to 40°C (41°F to 104°F)
Storage temperature	−20°C to +60°C (−4°F to + 140°F)
Dimensions	Approx. 430 × 105 × 382 mm (w/h/d) (17 × $4\frac{1}{4}$ × $15\frac{1}{8}$ inches) incl. projecting parts and controls
Weight	Approx. 10 kg (22 lb 1 oz) net

Accessories supplied

Remote Commander RMT-133
EAC-25 external antenna connector (300-ohm to 75-ohm matching transformer) (1)
75-ohm coaxial cable with F-type connectors 2 m (6 feet) long (1)
Connecting cord RK-74 (1)
AC power plug adaptor (1) (only for the PX model)

EAC-24 external antenna connector (1) (only for the PX model)

Design and specifications subject to change without notice.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

ATTENTION AU COMPOSANT AYANT RAPPORT
A LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UN TRAMÉ ET UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DU CIRCUIT QUI SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNMENT SONT IDENTIFIÉS DANS CE MANUEL. SUIVRE LES PROCÉDURES QUAND LES COMPOSANTS CRITIQUES SONT REMPLACÉS OU LE FONCTIONNEMENT IMPROPRE EST SUSPECTÉ.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
6. Check the B+ voltage to see it is at the values specified.
7. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

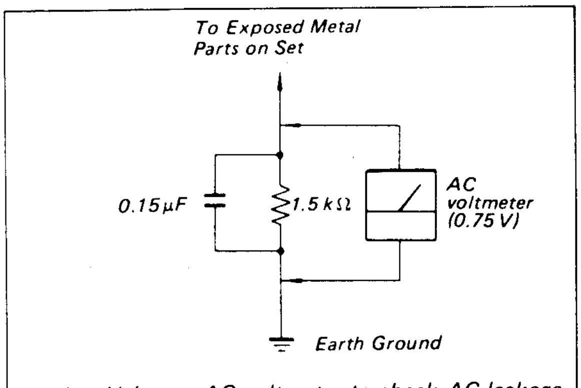


Fig. A. Using an AC voltmeter to check AC leakage.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

TABLE OF CONTENTS

Section *Title* *Page*

1. GENERAL

1-1. Location and Function of Controls..... 7
1-2. Antenna/Cable and TV Connection..... 11
1-3. Connection to an Audio System....... 14
1-4. Power Connection................ 15
1-5. Adjusting the TV................. 16
1-6. How to Select TV Channels.......... 17
1-7. Channel Presetting................ 18
1-8. Setting the Clock................. 18
1-9. TV Program Recording............. 19
1-10. Playback...................... 21
1-11. Use of the Time Counter........... 23
1-12. Timer-Activated Recording.......... 24
1-13. Quick Timer Recording............ 26
1-14. Beta Hi-Fi Audio Recording......... 27
1-15. PCM Recording and Playback........ 28
1-16. Editing a Tape.................. 29
1-17. Camera Recording................ 31

2. DISASSEMBLY

2-1. Disassembly of Cabinet.............. 33
2-2. Removal of the TU-76 Board and VI-11 Board...................... 34
2-3. Removal of the AU-8 Board and MP-7 Board...................... 34
2-4. Removal of the SS-32 Board............ 35
2-5. Removal of the TM-81 Board......... 35
2-6. Removal of the FU-38 Board............ 36
2-7. Removal of the RP-28 Board............ 36
2-8. Removal of the Power Block............ 37
2-9. Removal of the FL Cassette Compartment Assembly.......................... 37
2-10. Removal of the Reel Base Block Assembly... 38
2-11. Internal Views...................... 39

3. DIAGRAMS

3-1. Circuit Boards Location............... 40
3-2. Overall Block Diagram................ 41
3-3. Video Block Diagram................. 44
3-4. System Control Block Diagram.......... 47
3-5. System Control Circuit and Video Block Interface........................... 49
3-6. System Control Circuit and Audio Circuit Interface............................ 49
3-7. System Control Circuit and Reel Motor Control Circuit Interface................ 51
3-8. System Control Circuit and Mechanism Block Interface........................ 51
3-9. System Control Circuit and Servo Circuit Interface........................... 53
3-10. Capstan Phase System Timing Chart (REC)........................... 55
3-11. Capstan Phase System Timing Chart (PB)............................ 55
3-12. PG Signal Timing Chart.............. 56
3-13. Drum Phase System Timing Chart........ 56
3-14. Drum Speed System Timing Chart........ 57
3-15. Capstan Speed System Timing Chart...... 57
3-16. Servo Block Diagram................ 59
3-17. Audio Block Diagram................ 60
3-18. Audio Level Diagram REC (Normal)..... 60
3-19. Audio Level Diagram REC (Beta Hi-Fi).. 60
3-20. Audio Level Diagram PB (Normal)....... 64
3-21. Audio Level Diagram PB (Beta Hi-Fi).... 64
3-22. MTS Block Diagram................. 65
3-23. Tuner Block Diagram................ 67
3-24. Timer Block Diagram................ 69
3-25. Power Block Diagram................ 71

4. SCHEMATIC DIAGRAM AND PRINTED WIRING BOARDS

4-1. Frame Schematic Diagram.............. 73
4-2. Schematic Diagram and Printed Wiring Boards............................ 75
RP-28, VI-11 Board..................... 77
LM-16, SS-32, MI-4, AH-4, Reel Motor, Capastan Motor Board.................. 85
TU-76, MP-7 Board............... 94
AU-8 Board........................ 103
TM-81, FU-38 Board.............. 110
PS-39, PS-40, PS-41, PS-42 Board........ 116
4-3. Semiconductors.................... 121
4-4. UHF/VHF Tuner Schematic Diagram.... 123

5. EXLODED VIEWS

5-1. Front Panel, Cover Assembly............ 125
5-2. Tuner, Timer and Power Assemblies.... 126
5-3. Front Loading Assembly............... 127
5-4. Chassis Assembly 1.................. 128
5-5. Chassis Assembly 2.................. 129
5-6. Drum Assembly..................... 130
5-7. Reel Base Assembly.................. 131
5-8. Hardware List...................... 132
6. ELECTRICAL PARTS LIST.................. 133
7. ADJUSTMENT MANUAL.................... 159

RMT-133 (REMOTE COMMANDER)

1. Remote Control Operation.............. 218
2. Schematic Diagram.................... 219
3. Printed Wiring Board.................. 219
4. Exploded View....................... 221
5. Electrical Parts List.................. 222

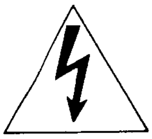
WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

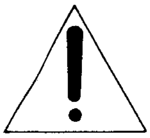
CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION : TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

CAUTION:
TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED AC PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

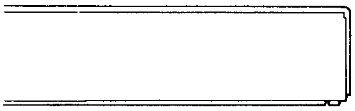
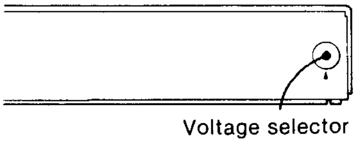
Information
This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

— reorient the receiving antenna
— relocate the equipment with respect to the receiver
— move the equipment away from the receiver
— plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:
"How to Identify and Resolve Radio-TV Interference Problems".
This booklet is available from the U.S. Government Printing Office, Washington DC, 20402, Stock No. 004-000-00345-4.

NOTE ON OPERATING POWER VOLTAGE AND FREQUENCY

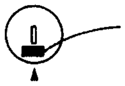
Depending on the area to be used, the SL-HF600 comes in three models to suit the local operating power voltage. Check which type your model is and be sure to follow **Caution** below before plugging the unit to the wall outlet.

	Voltage	Frequency
US, Canadian models Rear panel 	120 V	50/60 Hz
PX model Rear panel  	100/120/ 220/240 V	50/60 Hz

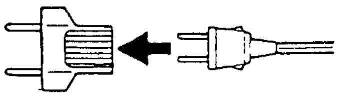
Caution

● For the US, Canadian model
Operate the unit only on 120 V AC.

● For the PX model
Make sure to set the voltage selector in accordance to the power voltage of your area. The unit may suffer **serious damage** if the voltage selector is not set correctly.



AC power plug adaptor (only for the models available at the PX)
If the ac plug of your recorder does not fit the wall outlet when using it in a 220 V area, attach the supplied ac plug adaptor.



The photos and illustrations used in this manual are those of the US, Canadian models. the differences on the appearance and the operation of the PX model is clearly mentioned as required.

PRECAUTIONS

On safety

- Before operating, check that the operating power voltage and frequency of the unit are identical with those of your local power supply.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- One blade of the plug is wider than the other for the purpose of safety and will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, contact your dealer.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the cord, pull it out by the plug. Never pull the cord itself.

On installation

- Allow adequate air circulation to prevent internal heat build-up.
- Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation slots.
- Do not install the unit near heat sources such as radiators or air ducts or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- The unit is designed for operation in a horizontal position. Do not install it in an inclined position.
- Keep the unit and cassette tapes away from equipment with strong magnets, as for example a microwave oven or a large loudspeaker.
- Do not place any heavy object on the unit.

On operation

- When the unit is not in use, turn the power off to conserve energy and to extend its useful life.
- Remove and store video cassettes after recording or playback.
- Store the cassettes in their cases and keep them in an upright position to prevent intrusion of dust and uneven winding.

On cleaning

Clean the cabinet, panel and controls with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution.
Do not use any type of solvent, such as alcohol or benzine which might damage the finish.

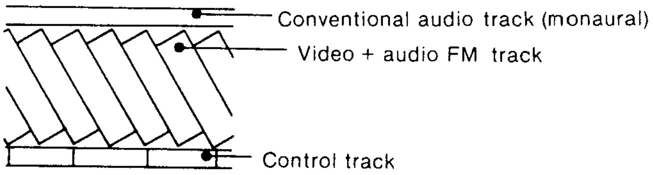
On repacking

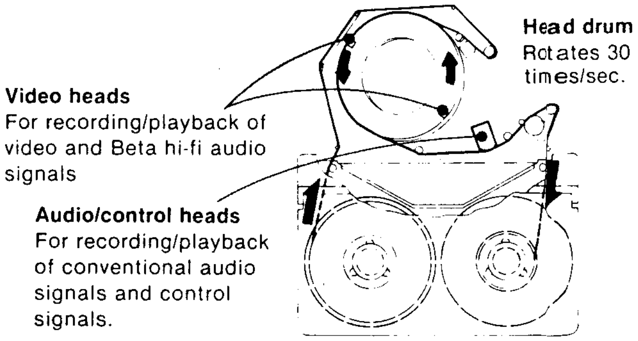
Do not throw away the carton and packing materials. They make an ideal container in which to transport the unit. When shipping the unit to another location, repack it as illustrated on the carton.

WHAT IS BETA HI-FI RECORDING?

In conventional recording, audio signals are recorded on the audio track and video signals on the video track. In Beta hi-fi recording, audio signals are recorded on the video track together with the video signals using 2 rotary video heads.
The Beta hi-fi audio signals are frequency-modulated and recorded on 2 channels, so that you can record a stereo or bilingual program with sound quality far superior to that of the conventional audio recording.

Beta hi-fi recording pattern on the video tape



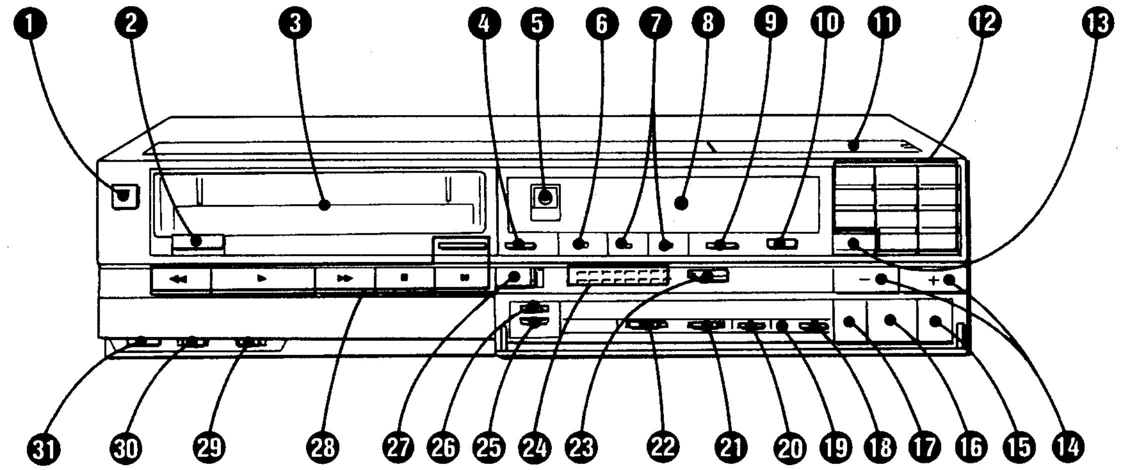

Head drum
Rotates 30 times/sec.
Video heads
For recording/playback of video and Beta hi-fi audio signals
Audio/control heads
For recording/playback of conventional audio signals and control signals.

When the BETA HI-FI selector is set to ON, this recorder records audio signals on the video track (Beta hi-fi recording) and on the conventional audio track at the same time, so that these tapes can also be played back on any ordinary video cassette recorder without a Beta hi-fi system.

SECTION 1
GENERAL

1-1. LOCATION AND FUNCTION OF CONTROLS

Front



① POWER switch and indicator
Press to turn the power on. The indicator lights up. To turn the unit off, press the switch again.
The timer section will continue to operate and the time will be displayed even if the POWER switch is off, as long as the ac power cord is plugged into a working outlet.

② ⏏ EJECT button
Press this button to eject the cassette. In playback, rewind and fast-forward operations, if ⏏ EJECT is pressed, tape transportation will stop and the cassette will be ejected.

③ Cassette compartment
Insert a cassette here. To eject the cassette, press ⏏ EJECT.

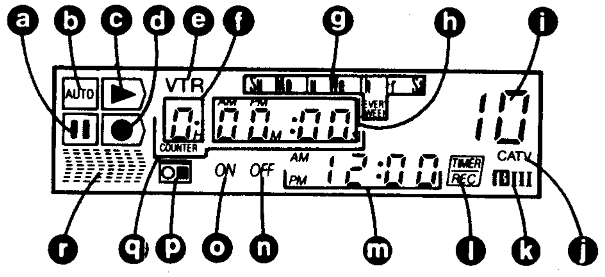
④ TAPE RETURN button
In stop mode, press to advance or rewind the tape to the counter “0H00M00S” point approximately.
When ▶ PLAY is pressed after TAPE RETURN, playback will start automatically after rewinding or fast-forward mode.

⑤ Remote sensor
Detects the infrared transmitting signal from the supplied Remote Commander.

⑥ Beta hi-fi indicator
When recording with the BETA HI-FI switch at ON, this indicator lights up. When playing back a Beta hi-fi recorded tape, the indicator lights up regardless of the BETA HI-FI selector's position.

⑦ STEREOCAST indicators
STEREO: This indicator lights up when a stereo broadcast is received with the AUTO STEREO switch set to ON.
SAP (Second Audio Program): This indicator lights to show that the NORMAL AUDIO selector is set to SAP.

⑧ Display window

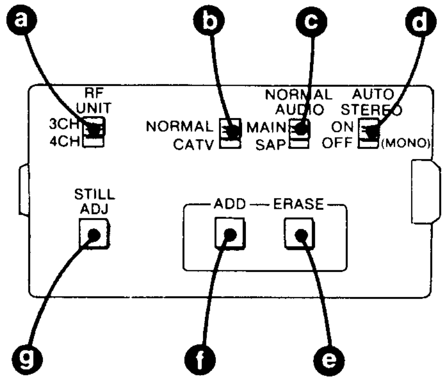


- ⓐ Lights during pause.
- ⓑ Lights when auto play, tape return, tape return play or automatic cassette eject is engaged.
- ⓒ Lights during playback.
- ⓓ Lights during recording.
- ⓔ Indicates VTR mode.
- ⓕ Indicates the timer program position during timer setting.
- ⓖ Day-of-the-week indicators
- ⓗ Indicates the turn-on time of the timer during timer setting.
- ⓘ Channel number. When INPUT SELECT is set to LINE/PCM, this number will disappear.
- ⓙ Lights when NORMAL/CATV is set to CATV.
- ⓚ Recording mode indicator
- ⓛ Lights when TIMER REC ON/OFF or QUICK TIMER is pressed.
- ⓜ Clock display. During timer setting, the turn-off time is displayed.
- ⓝ Turn-off indicator
- ⓞ Turn-on indicator
- ⓟ Lights when a cassette is inside.
- ⓠ Time counter. Indicates the approximate tape running time.
- ⓡ A sequence of arrows shows the speed and direction of tape movement.

⑨ CLEAR/RESET button
Press the button to reset the time counter to “0H00M00S” and also to clear the timer setting.

⑩ QUICK TIMER button
Press to start the timer recording quickly. The recording time is selected in 30 minute intervals, from 0:30 to 5:00. Press this button as many times as required until the desired recording time is displayed.

⑪ Tuning compartment



ⓐ RF UNIT selector
Select the channel for the VCR program and the output from the VHF/UHF OUT connector. Set the selector to 3 CH or 4 CH, whichever is not active in your area.

ⓑ NORMAL/CATV selector
Set to NORMAL to view normal TV programs and to CATV to view cable TV programs.

ⓒ NORMAL AUDIO (MAIN/SAP) selector
Select the sound to be recorded on the conventional audio track. Normally set to MAIN. If a Multichannel TV Sound broadcast is received, the MAIN sound will be recorded. To record SAP sound, set to SAP.

ⓓ AUTO STEREO switch
Normally set to ON. A stereo broadcast will be received in stereo. When there is excessive noise in a stereo program due to a weak incoming signal, set the switch to OFF. The noise will be reduced but the sound will become monaural.

ⓔ ERASE button
Press to erase inactive channels.

ⓕ ADD button
Press to add desired channels when presetting channels.

ⓖ STILL ADJ (adjust) button
If the freeze picture seems to shake, press this button until the picture stabilizes.

⑫ Channel number buttons and ENTER button
Press to select the TV channels directly. First press the numerals of the desired channel and then press ENTER.

⑬ TV/VTR button
Press this button to view the program selected on the recorder. The VTR indication appears in the display window.
To view a different TV program than the one being recorded, press the button again so that the VTR indication disappears.
When you press ▶ PLAY, the VTR indication reappears.

⑭ +/– buttons
Press to select the channels and to set the clock or timer programs.

⑮ TIMER REC ON/OFF button
Press to activate the timer recording. To deactivate the timer recording (including quick timer recording), press again.

⑯ NEXT button
Press to advance to the next item to be set during clock or timer setting.

⑰ TIMER SET button
Press this button as the first step in setting or resetting timer recording.

⑱ CHECK button
Press to check the contents of the timer presettings.

⑲ CLOCK button
Press this button as the first step in setting the current time.

⑳ βII/βIII (recording mode) selector
This selects the recording mode, βII or βIII. The recording time of any given cassette in the βIII mode is 1.5 times that in the βII mode.
The playback speed is automatically set regardless of this selector's position.

㉑ MONITOR SELECT HI-FI/NORMAL selector
Select the sound to be played back.
HI-FI: Normally set to this position. The sound recorded on the video track in Beta hi-fi will be heard.
NORMAL: To monitor the sound recorded on the conventional audio track.

㉒ MONITOR SELECT STEREO/L/R selector
Select the channel(s) of the Beta hi-fi sound to be played back.
STEREO: Usually set to this position. The stereo sound will be heard.
L: To monitor the L channel of a stereo program.
R: To monitor the R channel of a stereo program.

㉓ REC LEVEL control
Adjust the recording level when the BETA HI-FI selector is set to ON. Usually set to 5 (green position). When you record sound from other audio equipment, adjust manually to the proper position to get the optimum result.

㉔ PEAK LEVEL METER
This meter shows the peak input level of the right and left channels during Beta hi-fi recording. During playback, this meter shows the recorded level.

㉕ SHARPNESS control
Adjusts the sharpness of the picture if necessary. Usually set the control at the center detent position.

㉖ SUPER BETA switch
Normally keep this switch ON to obtain high quality recording/playback picture.
Only if by setting this switch to "OFF", over-modulation in the playback of tapes recorded or played back on other VCRs seems to be eliminated, set this switch to "OFF".

㉗ ● REC (record) button
Slide to the right to start recording.

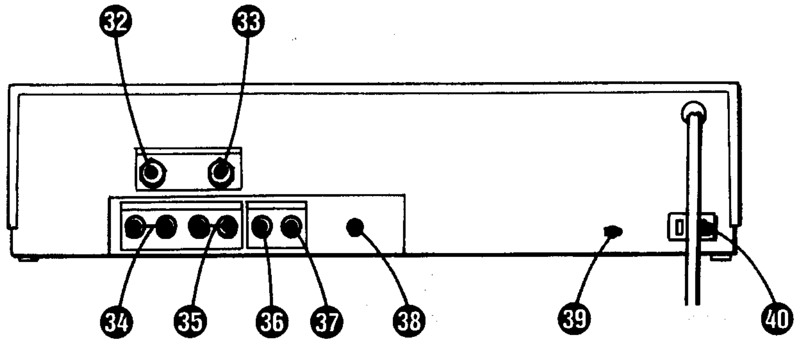
㉘ Tape transport buttons
- **◀◀ REW (rewind) button:** Pressing this button during playback enables you to view high-speed playback in reverse (Betascan).
- **▶ PLAY button:** Press to play back a tape. Also used for auto play and tape return play.
- **▶▶ FF (fast-forward) button:** Pressing this button during playback enables you to view high-speed playback (Betascan).
- **■ STOP button:** Press to stop the tape running.
- **❚❚ PAUSE/▶◀ STILL button:** Press to stop the tape momentarily during recording or playback. A freeze picture will be seen during playback. Press again to release pause mode.
- **❚❚▶ FRAME button:** During pause of playback (freeze picture mode), press to advance the picture by one frame (stop-action advance picture).

㉙ MPX FILTER/PCM selector
MPX FILTER OFF: Usually set to this position.
MPX FILTER ON: for recording FM broadcast programs (Only if your FM tuner has an internal MPX filter, set to OFF.)
PCM: for PCM recording
The setting of this selector is not necessary for TV recordings.

㉚ INPUT SELECT switch
Select the program to be recorded.
TUNER: for recording TV programs
LINE/PCM: for recording signals connected to VIDEO/PCM IN and LINE AUDIO IN.
LINE AUDIO: for recording sound from LINE AUDIO IN and picture of TV program on FM simulcast recording

㉛ TRACKING control
If streaks or snow appears in the playback of a cassette which has been recorded on another video cassette recorder, turn this control to obtain the best possible picture. Return the control to the center position after viewing the cassette.
The center detent position provides the correct tracking for the cassettes recorded on this recorder.

Rear



㉜ VHF/UHF IN connector (F-type)
Connect the VHF and/or UHF antenna cable(s).

㉝ VHF/UHF OUT connector (F-type)
Connect to the VHF and/or UHF antenna terminal(s) of a TV receiver. The signal of a VCR program converted to channel 3 or 4 and the VHF/UHF TV signal will be supplied to the TV receiver.

㉞ LINE AUDIO IN jacks (phono type)
Connect to the line outputs of a sound source such as a tape recorder, an amplifier or a tuner, or the audio outputs of another video cassette recorder.

㉟ LINE AUDIO OUT jacks (phono type)
Connect to the audio inputs of a color monitor, TV or another video cassette recorder, or connect to the line inputs of a stereo system.

㊱ VIDEO/PCM IN jack (phono type)
Connect to the video output of another video cassette recorder, camera adaptor, etc. For PCM recording, connect a PCM digital audio processor here.

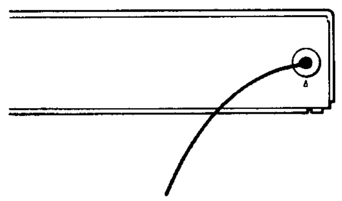
㊲ VIDEO/PCM OUT jack (phono type)
Connect to the video input of a color monitor, TV or another video cassette recorder. For PCM playback, connect a PCM digital audio processor here.

㊳ CONTROL S input jack (mini type)
Connect to the CONTROL S output jack of other Sony products for various systematic operations.
When this jack is connected to the CONTROL S OUT (EDIT) jack of the Sony SL-HF900 video cassette recorder, automatic assemble editing operation of the SL-HF900 can be activated with this recorder.

㊴ BETA HI-FI selector
ON: Normally, set to this position. Recording will be done in Beta hi-fi. (A tape not recorded in Beta hi-fi will be played back conventionally.)
OFF: Set to this position when recording only in the conventional (not Beta hi-fi) system.

㊵ AC OUTLET
This unswitched outlet supplies ac power to video or audio equipment with power consumption under 400 watts.

For the PX model only



Voltage selector
Turn this selector so that the arrow under the selector points to the operating voltage of your area.

Before making connections

- Turn off the TV.
- Connect the ac power cord after all the connections of the video cassette recorder and the TV have been completed.
- Make connections firmly. A loose connection may cause a distorted picture.

1-2. ANTENNA/CABLE AND TV CONNECTION

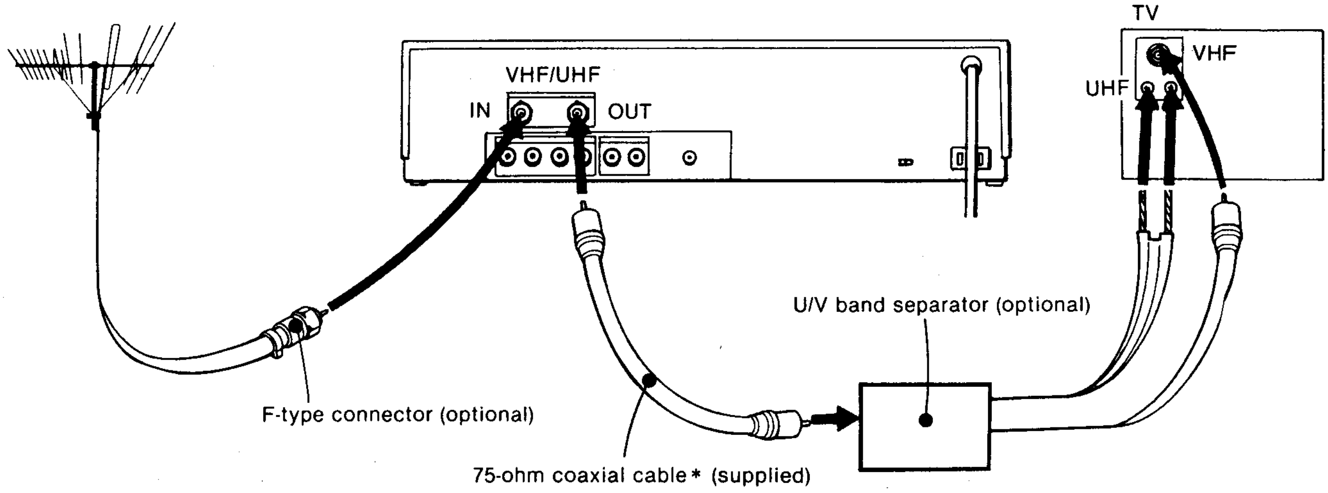
Disconnect the TV antenna cables from the TV receiver and connect them to the recorder, then connect the recorder and the TV.

Note
Keep the VCR away from the TV if the display or sound is affected.

Combination VHF/UHF antenna

Most combination antennas are equipped with a U/V band separator (signal splitter). Take off the separator and connect the cable directly to the recorder.

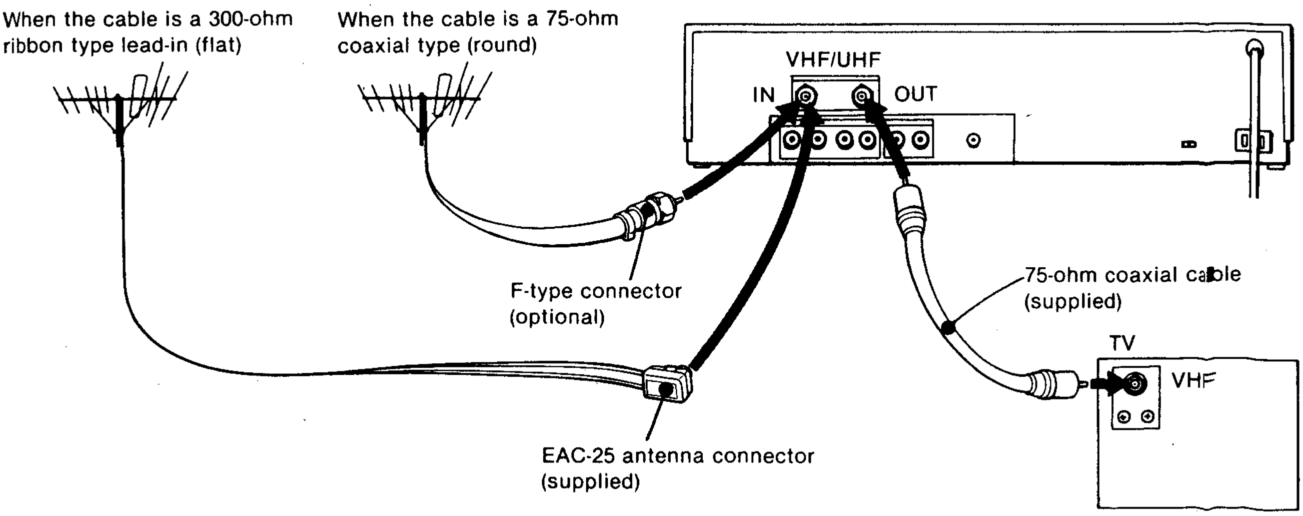
Use the removed separator to connect the recorder and the TV.


TV
VHF/UHF
IN
OUT
UHF
VHF
U/V band separator (optional)
F-type connector (optional)
75-ohm coaxial cable* (supplied)

*Use an optional RFC-8 extension cable (available in the U.S.A. and Canada), 8 m (25 ft) long, if the supplied 75-ohm coaxial cable is not long enough.

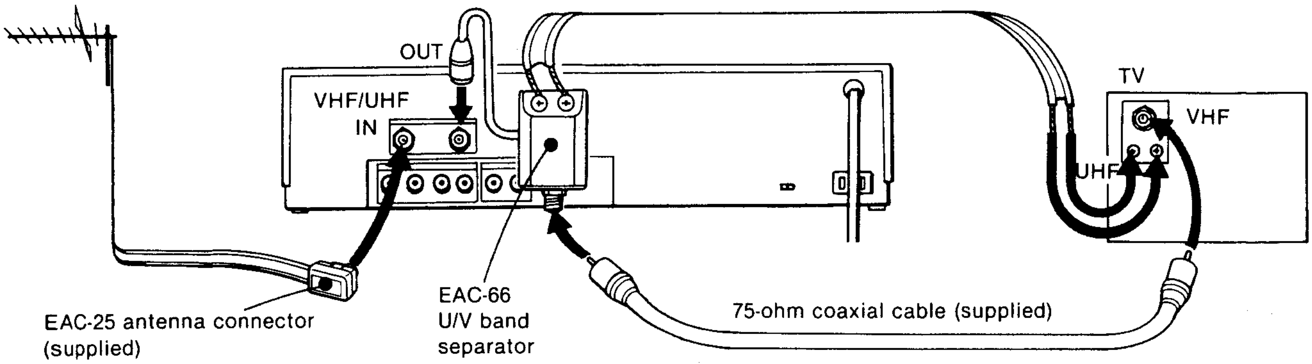
If you need a separator or a complete antenna system, see your Sony dealer or a qualified technician.

VHF antenna


When the cable is a 300-ohm ribbon type lead-in (flat)
When the cable is a 75-ohm coaxial type (round)
VHF/UHF
IN
OUT
F-type connector (optional)
75-ohm coaxial cable (supplied)
TV
VHF
EAC-25 antenna connector (supplied)

UHF antenna

Attach an optional EAC-66 U/V band separator to the VHF/UHF OUT connector of the recorder, and connect to the VHF and UHF antenna terminals of the TV.


OUT
VHF/UHF
IN
TV
VHF
UHF
EAC-66
U/V band
separator
EAC-25 antenna connector
(supplied)
75-ohm coaxial cable (supplied)

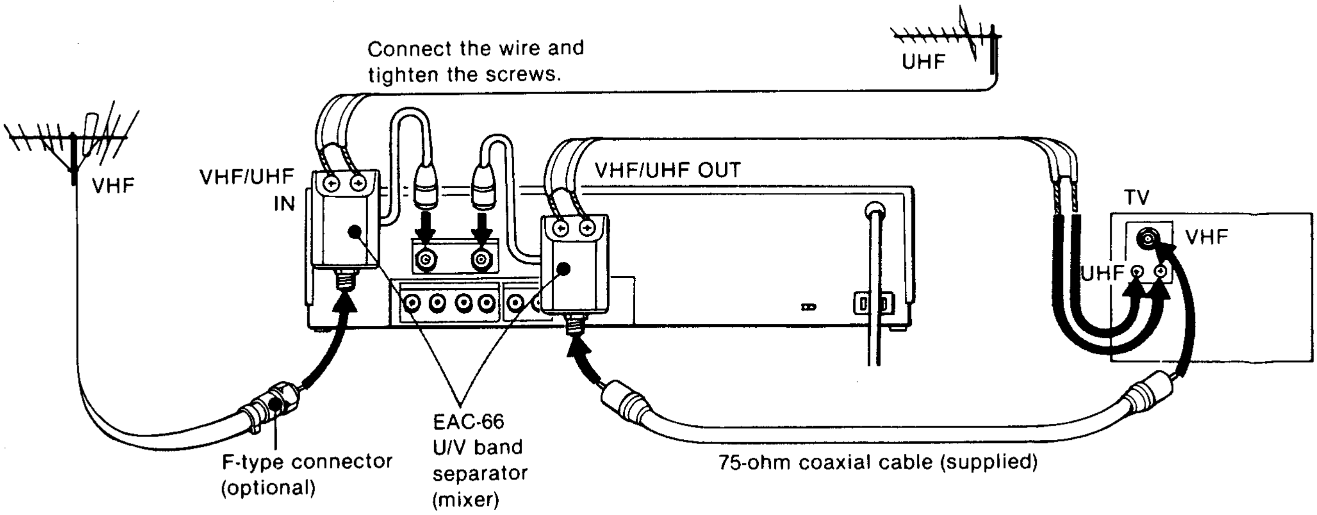
When both VHF and UHF antennas are connected

Attach an optional EAC-66 U/V band separator (mixer) to the VHF/UHF IN connector of the recorder, and connect the antennas to the U/V band separator.

Then attach another optional U/V band separator to the VHF/UHF OUT connector of the recorder, and connect to the VHF and UHF antenna terminals of the TV.

When a TV has a 75-ohm UHF/VHF antenna terminal

Easy connection of the recorder to the TV can be made with the supplied 75-ohm coaxial cable regardless of the types of antenna.


Connect the wire and
tighten the screws.
UHF
VHF
VHF/UHF
IN
VHF/UHF OUT
TV
VHF
UHF
F-type connector
(optional)
EAC-66
U/V band
separator
(mixer)
75-ohm coaxial cable (supplied)

Caution

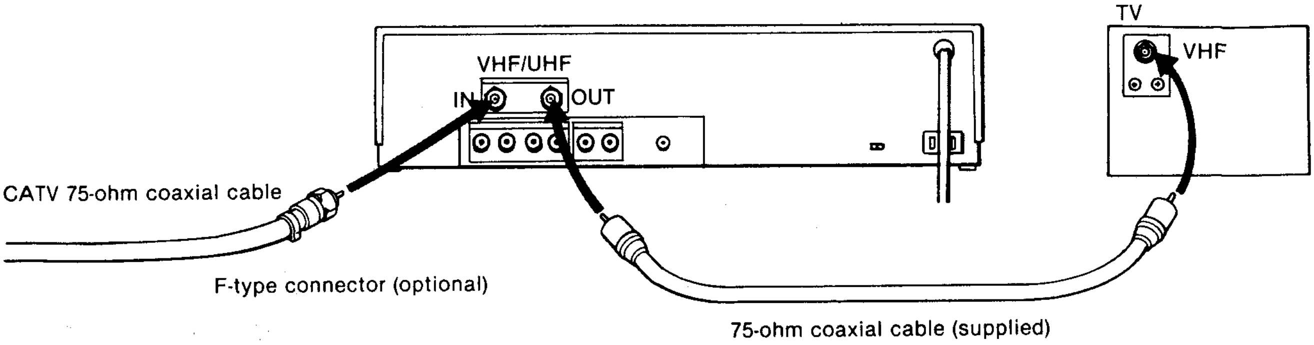
Connections between the recorder VHF/UHF OUT connector and the antenna terminals of a TV receiver should be made only as shown in these instructions. Failure to do so may result in operation that violates the regulations of the Federal Communications Commission regarding the use and operation of rf devices.

Never connect the output of the recorder to an antenna or make simultaneous (parallel) antenna and recorder connections at the antenna terminals of your receiver.

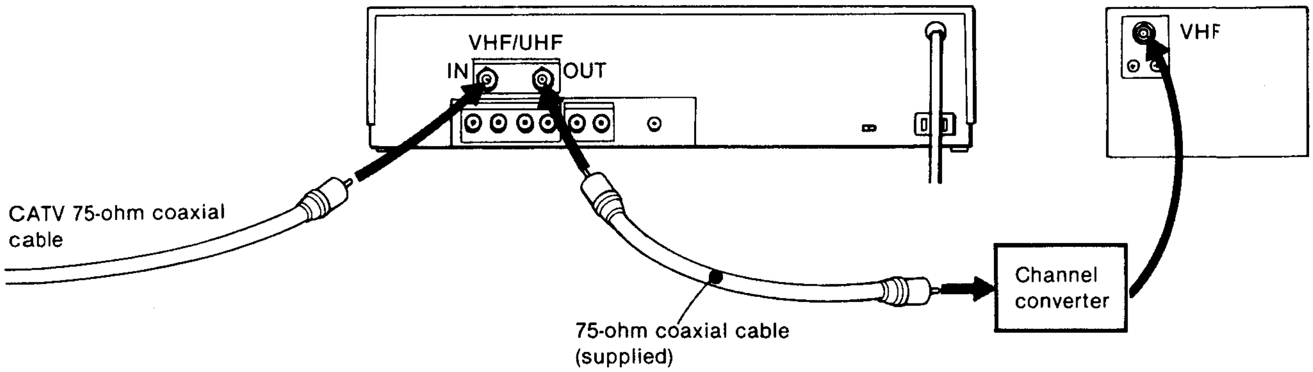
Once the connections explained above have been made, the antenna TV signals, as well as the signal from the recorder, will be fed to the TV and you can view TV programs in the usual way.

CATV cable

We recommend that you consult your cable company to make sure that the cable is properly connected.

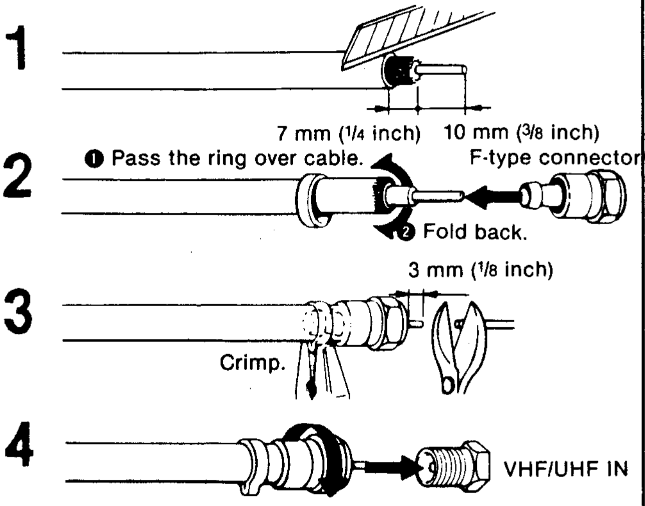

TV
VHF/UHF
IN
OUT
VHF
CATV 75-ohm coaxial cable
F-type connector (optional)
75-ohm coaxial cable (supplied)

When a TV is not a CATV compatible type
Connect the CATV channel converter between the recorder and the TV so that you can watch another CATV program while recording one CATV program. (The TV/VTR button is set to TV.)

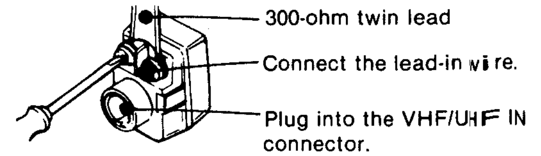

TV
VHF/UHF
IN
OUT
VHF
CATV 75-ohm coaxial cable
Channel converter
75-ohm coaxial cable (supplied)

Note to CATV system installer in the U.S.A.:
This reminder is provided to call the CATV system installer's attention to Article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

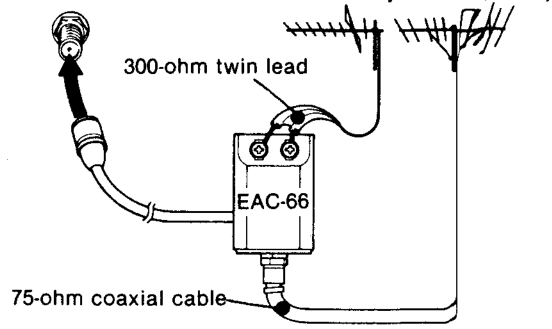
How to attach an F-type connector


1
7 mm (1/4 inch)
10 mm (3/8 inch)
2
❶ Pass the ring over cable.
F-type connector
❷ Fold back.
3
3 mm (1/8 inch)
Crimp.
4
VHF/UHF IN

How to attach an EAC-25 external antenna connector


300-ohm twin lead
Connect the lead-in wire.
Plug into the VHF/UHF IN connector.

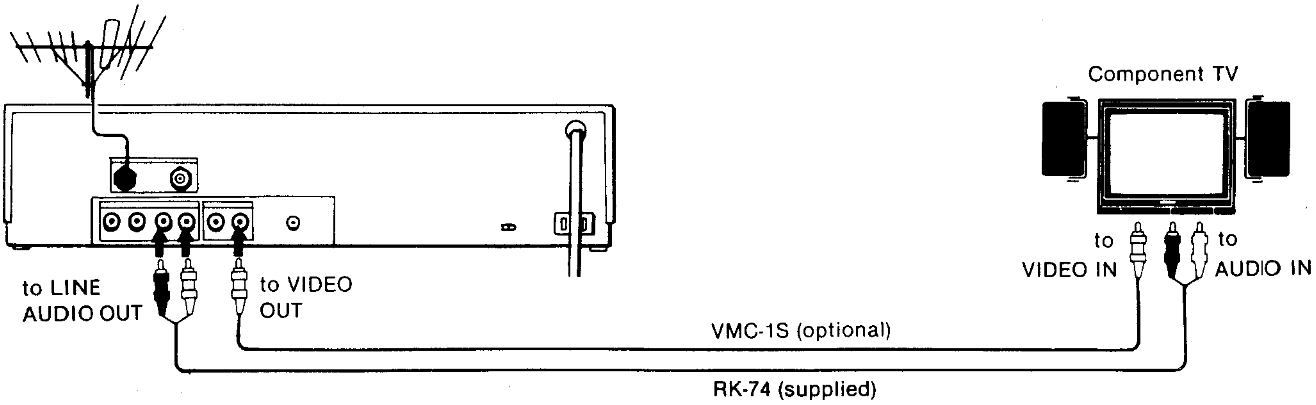
How to attach an EAC-66 U/V band separator (mixer)


300-ohm twin lead
EAC-66
75-ohm coaxial cable

CONNECTING A COLOR MONITOR

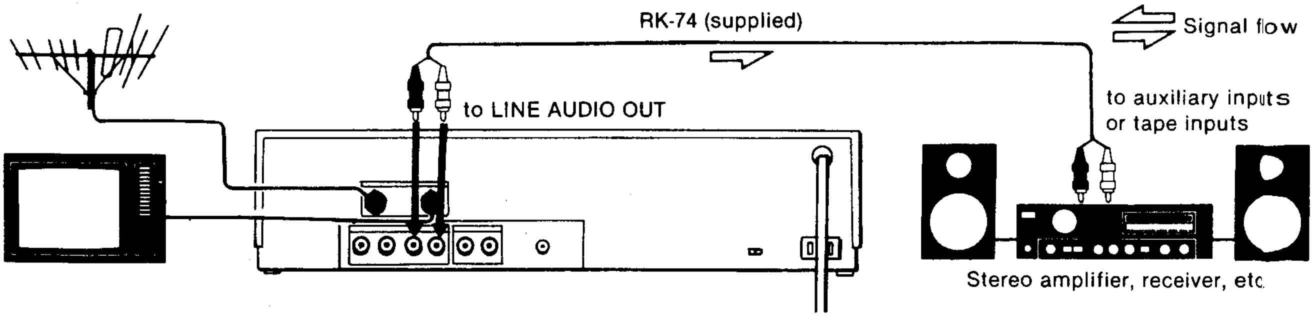
To obtain a better-quality picture, connect a color monitor, such as the Sony Profeel Trinitron Component TV, instead of a conventional TV receiver.
When a component TV is combined with the speaker system as illustrated, you can enjoy tapes recorded with Beta hi-fi stereo.

If you use a component TV tuner together with the monitor, connect the recorder and the TV tuner in the same way as in the case of the recorder and the conventional TV receiver described on pages 11 and12. For details on the connection of the TV tuner and the monitor, refer to the instruction manual of the TV tuner.

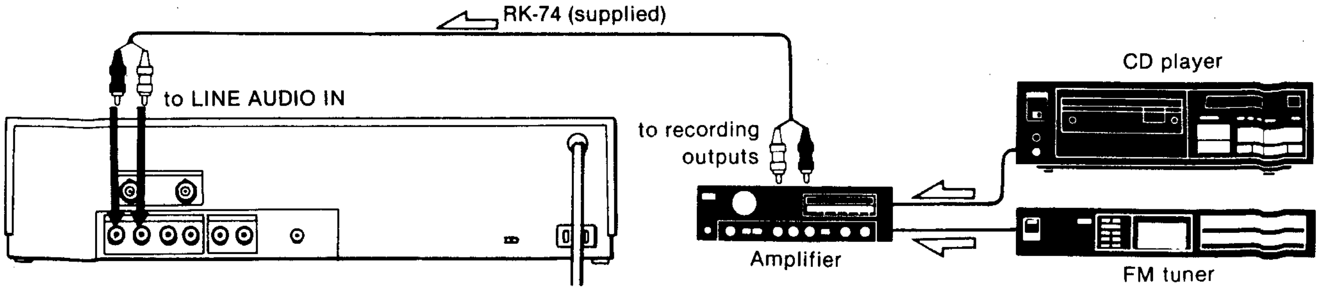

Component TV
to VIDEO IN
to AUDIO IN
to LINE AUDIO OUT
to VIDEO OUT
VMC-1S (optional)
RK-74 (supplied)

1-3. CONNECTION TO AN AUDIO SYSTEM

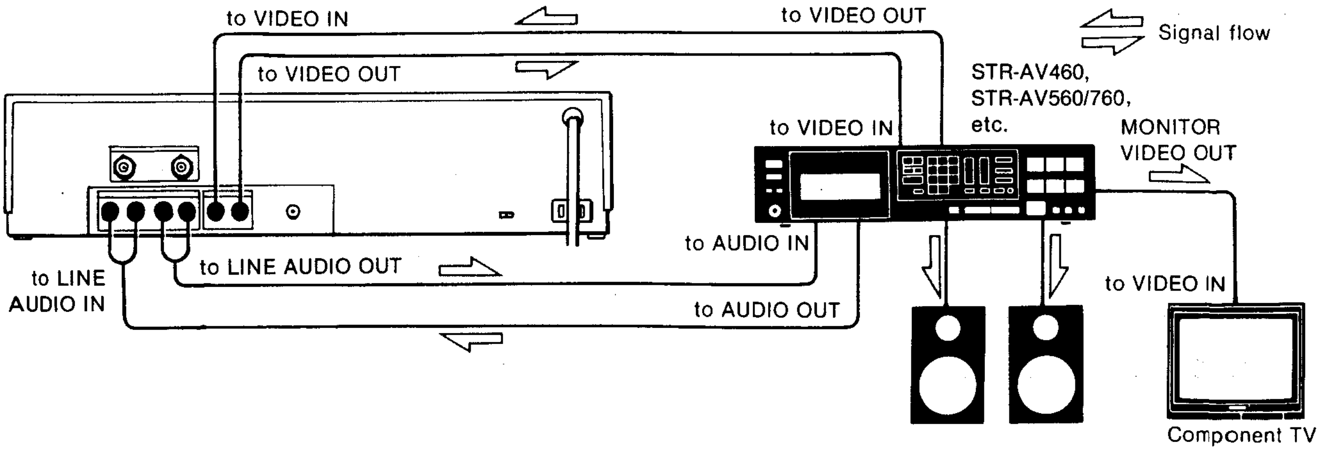
You can enjoy tapes recorded with Beta hi-fi stereo when the recorder is connected to your audio system.


RK-74 (supplied)
Signal flow
to LINE AUDIO OUT
to auxiliary inputs or tape inputs
Stereo amplifier, receiver, etc.

To record audio signals only from your audio system
You can record audio source such as an FM tuner, CD player, with the Beta hi-fi system without recording video signals.


RK-74 (supplied)
to LINE AUDIO IN
to recording outputs
CD player
Amplifier
FM tuner

Connection to a receiver equipped with VIDEO connectors

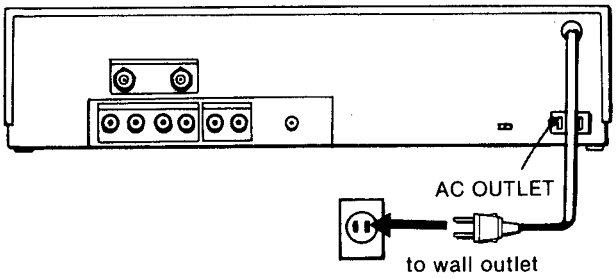

to VIDEO IN
to VIDEO OUT
Signal flow
to VIDEO OUT
STR-AV460,
STR-AV560/760,
etc.
to VIDEO IN
MONITOR
VIDEO OUT
to AUDIO IN
to LINE AUDIO OUT
to LINE
AUDIO IN
to VIDEO IN
to AUDIO OUT
Component TV

For details, see the instruction manual of the receiver.

Notes

- If the VCR is installed near a tuner or a radio, noise may be heard in AM reception. In this case, keep the VCR away from the tuner or the radio, adjust the AM bar antenna for minimum noise, or connect an external AM antenna to the tuner.
- Before connecting or disconnecting the power cord of the VCR, be sure to turn the connected amplifier off.

1-4. POWER CONNECTION


AC OUTLET
to wall outlet

When you insert the power plug into a wall outlet, all indicators in the display window will light up for about six seconds (and the tape loading mechanism may also run a little). All functions will not operate at this step, although the power indicator lights up. After these six seconds, the power is turned off. To supply power to the recorder, press the POWER switch.

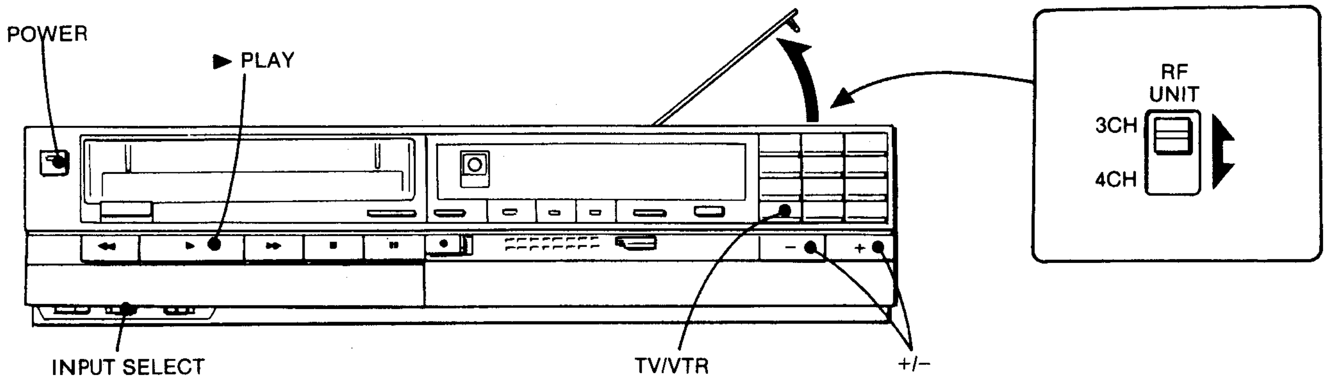
AC OUTLET

This socket provides a convenient ac power source for other video or audio equipment whose power consumption is under 400 watts. Power will be supplied to the connected equipment even if the recorder is turned off.

- Do not connect here any electrical home appliances whose power consumption exceeds 400 watts, such as an electric iron or fan.

1-5. ADJUSTING THE TV

Your TV receiver must be adjusted to receive the signal from your recorder. If you connect a color monitor, it does not need adjusting.



If you do not have a recorded video cassette tape / **If you have a recorded video cassette tape**

❶ Set RF UNIT located in the tuning compartment to 3 CH or 4 CH whichever channel is not active in your area.
❷ Press POWER. The lamp lights.

If you do not have a recorded video cassette tape:

❸ Press TV/VTR to display the VTR indicator in the window.
❹ Check that INPUT SELECT is set to TUNER, then select an active channel in your area with the +/– button on the recorder.

If you have a recorded video cassette tape:

❸ Insert the cassette.
❹ Press ▶ PLAY.

Then:

❺ Turn on the TV.
❻ Set the TV receiver to either VHF channel 3 or 4 to agree with the RF UNIT setting.
The TV program selected on the recorder or the tape program will be displayed on the TV screen. If a picture does not appear on the TV screen or if the display is not clear, fine-tune the channel on the TV.

- For details about TV channel adjustment, see the instruction manual of the TV receiver.

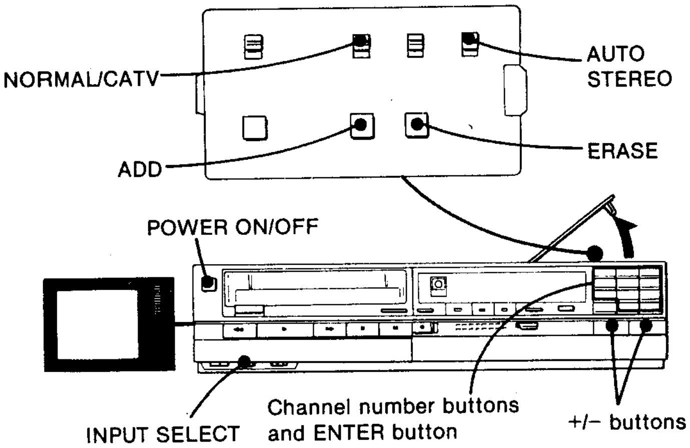
Check!
Check that the program displayed on the screen changes when a different channel is selected on the recorder. If the program does not change, repeat the preceding steps.

Check!
Check that the display on the screen changes when you stop the tape by pressing ■ STOP on the recorder. (To eject the cassette, press ⏏ EJECT.) If the program does not change, repeat the preceding steps.

Now your TV receiver is tuned to the recorder. Whenever you use the video recorder, you should set the TV to the channel which you have chosen above.

1-6. HOW TO SELECT TV CHANNELS

Your recorder is capable of receiving VHF channels 2–13, UHF channels 14–69 and cable TV channels 1 to 125. (See cable TV channel chart below.)
You can select the desired channel by pressing the appropriate channel number buttons, or by scanning higher or lower among the preset channels with the +/– buttons.
To preset the desired channels, see page 18.



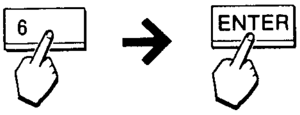
Preparations

1 Turn on the recorder and set INPUT SELECT to TUNER.
2 Turn on the TV and select the channel to view the recorder (channel 3 or 4).
3 For cable TV programs, set NORMAL/CATV in the tuning compartment to CATV. For off-the-air programs, set to NORMAL.

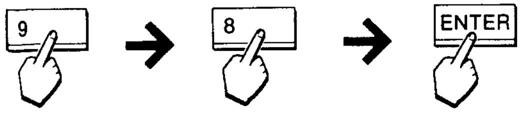
Select the channel in one of the following two ways.

Using the channel number buttons
Press the numerals of the channel and then press ENTER.

Ex. To select channel 6



To select channel 98



If you pressed a wrong numeral, wait for a few seconds until the previous number is recalled. Then try again.

Using the +/– buttons
Press "+" for higher-numbered channels and "–" for lower-numbered channels. Preset channels will appear in sequence.

Cable TV channel chart

Cable TV systems use letters or numbers to designate channels. To tune in a channel, refer to this chart.

Number on this VCR						1	5	6	14	15	16	17
Corresponding cable TV channel						A–8	A–7	A–6	A	B	C	D
18	19	20	21	22	23	24	25	26	27	28	29	30
E	F	G	H	I	J	K	L	M	N	O	P	Q
31	32	33	34	35	36	37	38	39			93	94
R	S	T	U	V	W	W+1	W+2	W+3			..................W+57	W+58
95	96	97	98	99	100	101	102			123	124	125
A–5	A–4	A–3	A–2	A–1	W+59	W+60	W+61			..................W+82	W+83	W+84

Check with your local cable TV company for more complete information on the available channels.

*The designation of the cable TV channels conforms to the EIA/NCTA recommendation.

Note
Pay cable TV systems use scrambled or encoded signals and require special converters (decoders) in addition to the normal cable connection.

1-7. CHANNEL PRESETTING

By adding and erasing channels, you can preset your recorder so that only the desired channels appear in sequence when the +/– buttons on the recorder or on the Remote Commander are pressed.
(For adding and erasing cable TV channels, be sure to set NORMAL/CATV to "CATV".)

ADDING CHANNELS

1 Select the channel to be added by pressing the channel number buttons and then ENTER.
2 Press ADD in the tuning compartment.
The channel indicator will momentarily show "––" and then the number of the channel added.

Repeat steps 1 and 2 for other channels to be added. The added channels will appear in the proper numerical sequence when the + or – button is pressed.

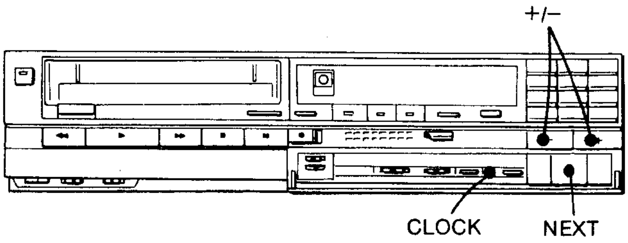
ERASING CHANNELS

1 Select the channel to be erased by pressing the channel number buttons and ENTER, or the +/– buttons.
2 Press ERASE in the tuning compartment.
The channel indicator will momentarily show "––" and then the number of the channel erased.

Repeat steps 1 and 2 for other channels to be erased. The erased channels will be skipped over in the numerical sequence when the + or – button is pressed.

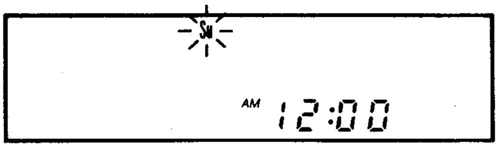
1-8. SETTING THE CLOCK

When you connect the ac power cord to a wall outlet, the clock indicates "Su AM 12:00" after 6 seconds and will blink to show that it must be set.

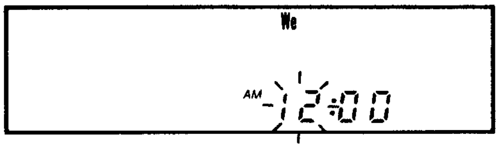


Example: To set for Wednesday afternoon at 3:56

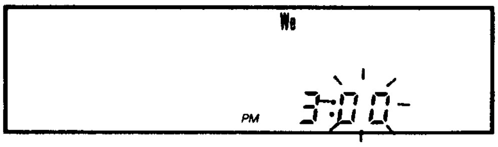
1 Press CLOCK.
Set the day with the + or – button.



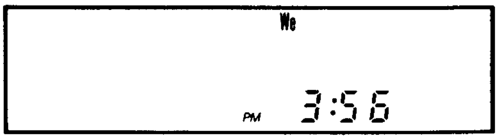
2 Press NEXT.
Set hours with the + or – button.
AM 12:00 = Midnight
PM 12:00 = Noon



3 Press NEXT.
Set the minutes with the + or – button.



4 For accurate setting, press NEXT at the same time with an announced time signal.
The clock will now show the current time.



The dots of the colon (:) alternately blink every 30 seconds.

+/– buttons
The + and – buttons can be used in two ways:

When you keep the button pressed, the digits will advance continuously until the button is released.

When you press and immediately release the button, the digits will advance by one.

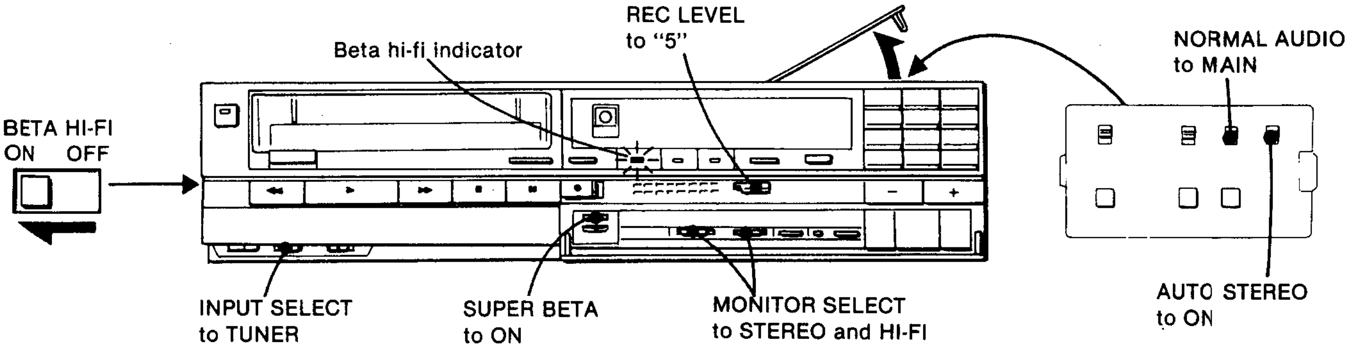
1-9. TV PROGRAM RECORDING

Note
The power is automatically turned on when a cassette is inserted, even though POWER is not pressed. However, this is to protect the unit from damage due to the insertion of a cassette without first turning on the power. Always turn on the power by pressing POWER before inserting a cassette.

Caution

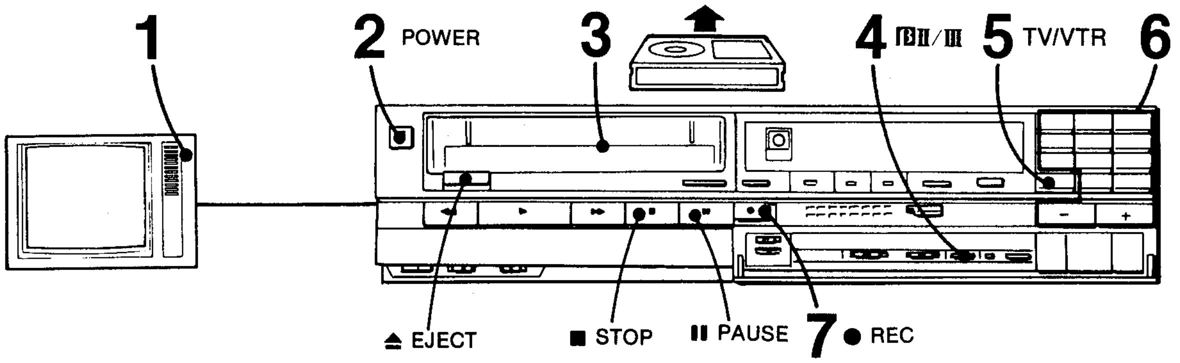
Television programs, films, video tapes and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of the copyright laws.
Also, use of this recorder with cable television transmission may require authorization from the cable television transmitter and/or program owner.

Check before recording


REC LEVEL
to "5"
Beta hi-fi indicator
NORMAL AUDIO
to MAIN
BETA HI-FI
ON OFF
INPUT SELECT
to TUNER
SUPER BETA
to ON
MONITOR SELECT
to STEREO and HI-FI
AUTO STEREO
to ON

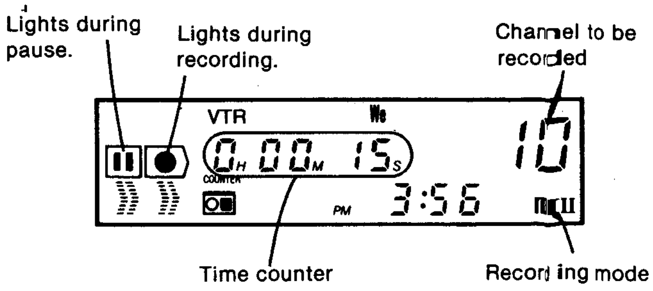
When BETA HI-FI is set to ON, recording is done both on the video track (Beta hi-fi recording) and on the conventional audio track.

Recording
Numbers in the illustration show the sequence of operation.


1
2 POWER
3
4 βII/βIII
5 TV/VTR
6
⏏ EJECT
■ STOP
II PAUSE
7 ● REC

1 Turn on the TV and select the channel for the video recorder: channel 3 or 4.
2 Press POWER on the recorder to turn the power on.
3 Insert a cassette.
4 Select the recording mode with βII/βIII.
The length of recording time differs for each mode. Refer to the chart of the right column.
5 Press TV/VTR to select the VTR mode.
6 Select the channel to be recorded with the channel number buttons and ENTER button or the + or – button.
7 Slide ● REC to the right. Recording will start.
If the tape reaches the end during recording, the tape will be rewound to the beginning automatically.

Check in the window


Lights during pause.
Lights during recording.
Channel to be recorded
VTR
0H 00M 15S
COUNTER
10
PM 3:56
Time counter
Recording mode

Recording time available in each mode

Cassette used	βII mode	βIII mode
L-125	30 min.	45 min.
L-250	1 hr.	1 hr. 30 min.
L-500	2 hr.	3 hr.
L-750	3 hr.	4 hr. 30 min.
L-830	3 hr. 20 min.	5 hr.

To stop recording, press ■ STOP.
To eject the cassette, press ■ STOP, then ≙ EJECT.
To stop the tape momentarily, press ❚❚ PAUSE.
To resume recording, press the button again. If you do not resume recording more than about 8 minutes, the pause mode will be automatically released.

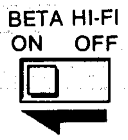
In case you want to record a tape which is to be played back on another recorder from the very beginning of the tape, run the tape for about 15 seconds before starting recording. Otherwise you may miss the starting point during playback on the other machine.

TO RECORD MULTICHANNEL TV SOUND (MTS) BROADCASTS (STEREOCASTS)

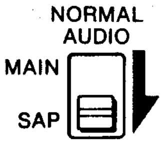
Make sure AUTO STEREO in the tuning compartment is set to ON.

In the years to come, an increasing number of programs will be broadcast in stereo. Called Multichannel TV Sound or MTS, the new technology will greatly enhance TV viewing by bringing you programs with high fidelity stereo sound.
MTS also provides for an extra channel called the Second Audio Program or SAP which broadcasters can use to transmit a second language for bilingual transmissions or some other sound track.

To record a stereo broadcast
Set BETA HI-FI selector on the rear panel to ON. When the STEREO indicator lights up, a stereo broadcast is being received. The recording procedure is the same as usual.



To record a SAP (Second Audio Program) broadcast
Set NORMAL AUDIO to SAP. The SAP indicator will light up. If recording is made when there is a SAP broadcast, the SAP sound will be recorded on the conventional audio track while the MAIN sound is recorded on the video track in Beta hi-fi.
To listen to the SAP sound, set MONITOR SELECT to NORMAL.



To record a MAIN broadcast only
Set NORMAL AUDIO to MAIN. The MAIN sound will be recorded on the video track and the conventional audio track.

Notes
- When a SAP sound is not to be recorded, be sure to set NORMAL AUDIO to MAIN. If it is set to SAP and there is no SAP broadcast, no sound is recorded on the conventional audio track.
- You may find more noise in the reproduction of the audio of SAP than in that of the main sound.

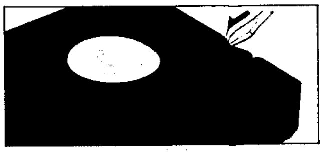
TO VIEW ONE TV PROGRAM WHILE RECORDING ANOTHER

Press TV/VTR so that the VTR indicator disappears from the display window. Select the channel you want to view on the TV.

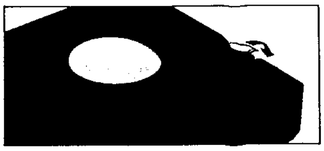
TO KEEP A RECORDED PROGRAM FROM BEING ACCIDENTALLY ERASED

When a new recording is made on a previously recorded cassette, the previous recording will be automatically erased.

To avoid erasing a recording
Break off the safety tab using a screwdriver or similar object. The cassette will be ejected automatically even when you slide REC to the right.



To re-record on a cassette which has had its safety tab removed
Cover the hole with a piece of plastic tape.



TO START RECORDING FROM A PARTICULAR POINT

You can decide the starting point for recording while watching the playback picture or by searching for the point using the Betascan and Beta SkipScan functions.

1. Search for the point where you wish to start recording on the tape by playing back the tape or using the Betascan or the Beta SkipScan function.
2. Press ▮▮ PAUSE to stop the tape where you wish to start recording.
3. Slide ● REC to the right. The recorder will enter the record pause mode and the picture selected by INPUT SELECT will appear on the monitor screen.
4. Press ▮▮ PAUSE to release the pause mode. Recording starts.

- At the starting point of recording, the picture may be distorted or streaks may appear.

NOTE

ABOUT THE SUPER BETA SWITCH

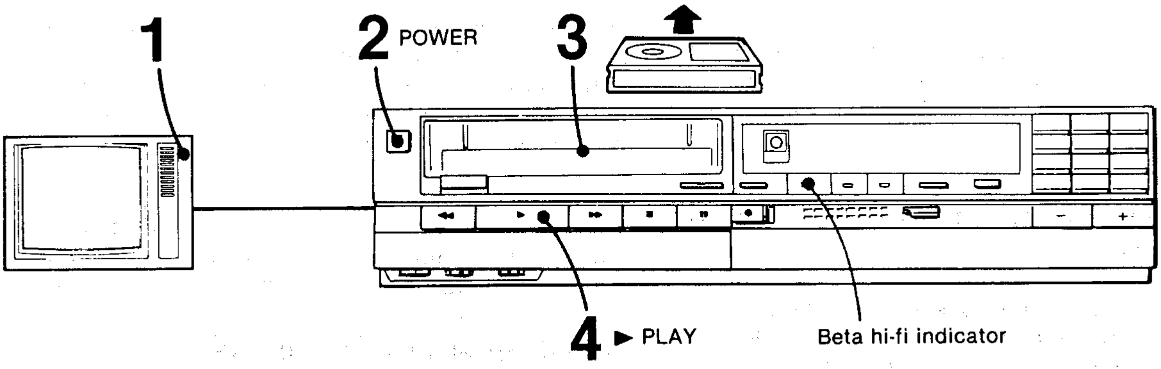
Normally, keep this switch in the "ON" position to obtain high picture quality recording and playback.

Tapes recorded in other non-SuperBeta VCRs can be played on SuperBeta VCRs.

Tapes recorded in SuperBeta can be played on other non-SuperBeta VCRs: However, some overmodulation noise may appear in the picture during playback. If you intend to play back on other non-SuperBeta VCRs, then set the SUPER BETA switch to the "OFF" position when making your recordings.

1-10. PLAYBACK

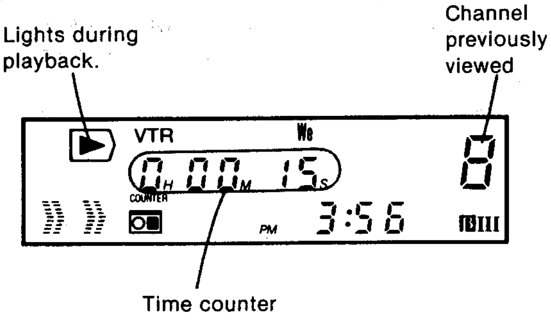
Numbers in the illustration show the sequence of operation.



1. Turn on the TV and select the channel for the video recorder: channel 3 or 4.
2. Press POWER on the recorder to turn the power on.
3. Insert the cassette.
4. Press ► PLAY. Playback will start.

- If the tape reaches the end during playback, the tape will be automatically rewound to the beginning.
- The Beta hi-fi indicator will light up when a Beta hi-fi recorded tape is played back.

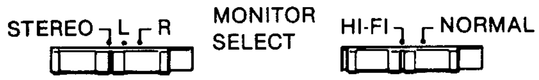
Check in the window



Notes

- If you are playing back a tape that was recorded on another VCR or on this VCR with the SUPER BETA switch OFF, noise (if any) in the picture may be eliminated by setting the SUPER BETA switch to OFF. Normally, keep this switch at ON.
- To change to channel 3 or 2 on your TV from the channel on which you have been viewing something from the video recorder, be sure to press TV/VTR **first** and then change to channel 3 or 2 on your TV. If TV/VTR is pressed after channel 3 or 2 is set on your TV, you might not get a picture. In this case, change your TV channel to another channel and then come back to channel 3 or 2.

TO SELECT THE MONITOR SOUND



Playback of Beta hi-fi stereo sound programs
Set the above selectors to HI-FI and STEREO.

When the recorder is connected to a Component TV or a stereo system you can enjoy stereo sound reproduction.

When a conventional (monaural) TV is connected, the sound of the left and right channels are mixed so that monaural sound comes from the TV speaker.

To select the left or right channel of stereo programs
Set the above selectors to HI-FI and L or R.
Select the position L or R to play back the channel you wish to listen to.

Playback of SAP sound
To listen to the SAP sound that was recorded by setting the NORMAL AUDIO selector to the SAP position, set the MONITOR SELECT (HI-FI/NORMAL) selector to NORMAL.

WHEN YOU PLAY BACK A TAPE RECORDED ON ANOTHER VCR

- If the VCR on which the tape was recorded is not equipped with the Beta hi-fi system, the recorder will play back the tape in the conventional way.
- If streaks or snow appear, adjust TRACKING for the best possible picture. Return the control to the center position after viewing that tape.

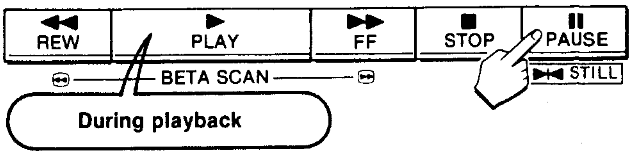
- To get a sharp picture, turn SHARPNESS toward SHARP.

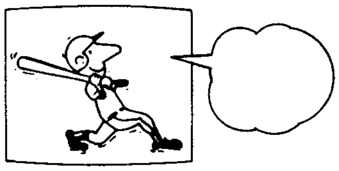
SOFT
SHARP
SHARPNESS

VARIOUS PLAYBACK MODES

FREEZE PICTURE

Press ❚❚ PAUSE during playback.





Sound cannot be heard in the freeze picture or stop-action advance picture.

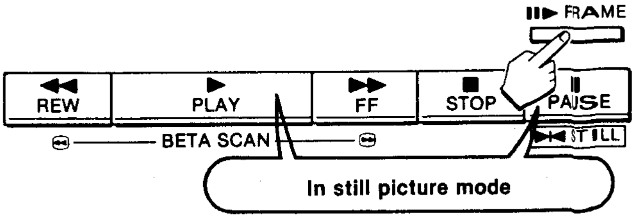
To resume playback, press ❚❚ PAUSE again or press ▶ PLAY.

If the freeze picture seems to shake, press STILL ADJ in the tuning compartment until the picture stabilizes. As long as the same TV is used with this VCR, readjustment should not be necessary.
(If the power cord is disconnected or if the power is interrupted for more than a few seconds, this adjustment will be cleared and readjustment will be needed.)

Automatic pause release
To protect the video heads and the tape, the pause mode will be automatically released after about 8 minutes and playback will resume.

STOP-ACTION ADVANCE PICTURE

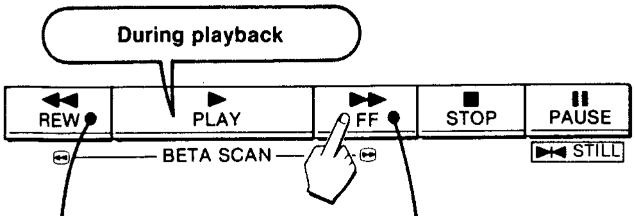
In still picture mode, press ❚❚▶ FRAME.



Each time the button is pressed momentarily, the picture advances by one frame. If ❚❚▶ FRAME is kept depressed, the picture advances frame by frame continuously.
To resume playback, press ❚❚ PAUSE or ▶ PLAY.

BETASCAN **Viewing the picture at a fast speed to find a particular scene**

Press ▶▶ FF or ◀◀ REW during playback. When you release the button, the normal playback will resume.

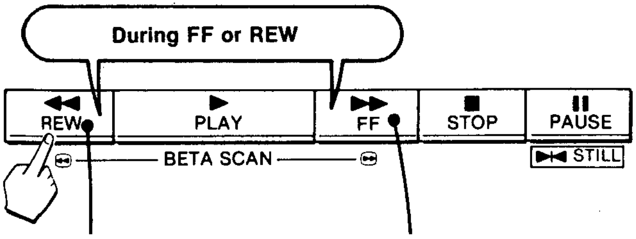


For reverse high-speed playback

For forward high-speed playback

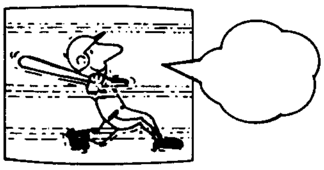
BETA SKIPSCAN **Viewing the picture momentarily during fast-forward or rewind**

Press ▶▶ FF or ◀◀ REW during fast-forward or rewind mode. When you release the button, the fast-forward or rewind mode will resume.



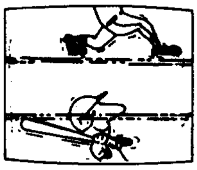
For reverse high-speed playback

For forward high-speed playback



Streaks will appear and sound will be muted in the Betascan picture or Beta SkipScan picture.

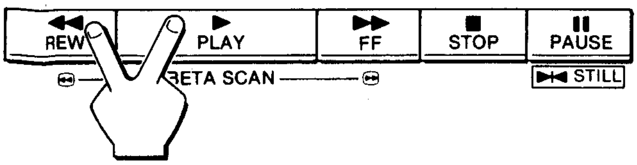
Notes



- If the picture rolls vertically, adjust the vertical hold control on the TV.
- During Betascan, the Beta hi-fi indicator may sometimes not light even when a Beta hi-fi recorded tape is played back.
- The pause, Betascan and Beta SkipScan functions cannot be activated with the βI recorded tape.

AUTO PLAY **To play a tape back from the beginning of the tape after rewinding**

Press ▶ PLAY while holding ◀◀ REW depressed. After the tape is completely rewound, it will automatically be played back.

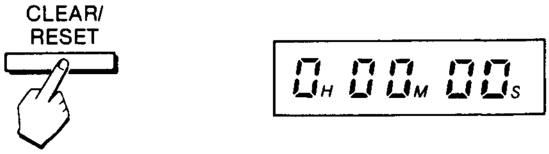


1-11. USE OF THE TIME COUNTER

The time counter indicates the approximate running time of the tape and the relative position of programs on the tape.

TO INDEX THE TAPE CONTENTS

Before starting recording or playback, press CLEAR/RESET to set the counter to "0H00M00s". By noting the counter reading at the desired point, you can easily find that point later by referring to the counter. Use the label on the cassette to list the programs and their counter readings.



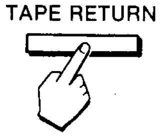
Notes

- The counter reading is automatically reset to zero when a cassette is newly inserted.
- The counter reading will be retained in the memory even after the power is turned off, as long as the cassette is in the cassette compartment.
- The counter will not advance during any portion of a tape that is blank or unrecorded. So the counter can be used to find unrecorded portions on a tape.

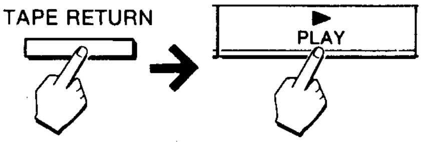
TAPE RETURN/TAPE RETURN PLAY

—To stop the tape at a particular point or play back from a particular point

1 During recording or playback, press CLEAR/RESET at the point you want to locate later.
2 When recording or playback is finished, stop the tape and press TAPE RETURN.
The tape will be rewound or advance close to the point where the counter reads "0H00M00s".



To start playback automatically from the "0H00M00s" point
Press ▶ PLAY after pressing TAPE RETURN.



The AUTO▶ and ▶ indicators light in the window during rewinding or fast-forward mode.

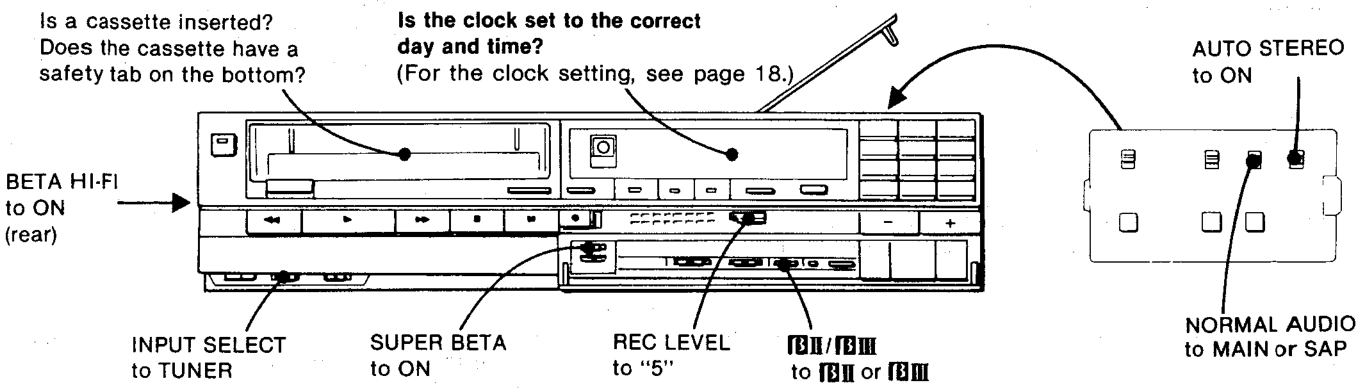
The tape return or tape return play can be activated also from the rewind or fast-forward mode.

Note
The tape return and tape return play cannot be activated when the counter reading is within ±0H00M29s".

1-12. TIMER-ACTIVATED RECORDING

This timer can only be used to start and stop recording. The timer can be set to record up to six different programs on any day and time within following seven days, at the same time everyday or on the same day and time every week.

Check before setting the timer


Is a cassette inserted? Does the cassette have a safety tab on the bottom?

Is the clock set to the correct day and time? (For the clock setting, see page 18.)

AUTO STEREO to ON

BETA HI-FI to ON (rear)

INPUT SELECT to TUNER

SUPER BETA to ON

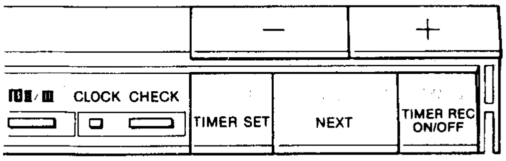
REC LEVEL to "5"

βII/βIII to βII or βIII

NORMAL AUDIO to MAIN or SAP

SETTING THE TIMER

Suppose you want to make a recording of channel 6 from 7:10 to 11:15 on Friday evening.



NEXT button
Every time you press the NEXT button, the item to be preset will blink and you will be setting the item.

+/− buttons
To set the day of the week, the time and the channel, press the + button to advance, and the − button to go back.

Day indication
By pressing the + button, the day indication changes as follows:

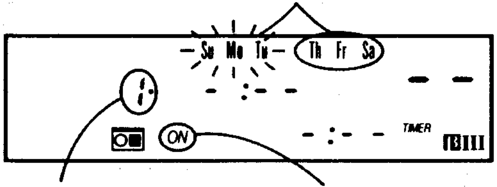
Ex. Today is Friday.

Su Mo Tu We Th Fr Sa → Fr → Sa → ... → Th
(everyday) (today) (tomorrow)
Th ← SA ← Fr ←
EVERY WEEK EVERY WEEK EVERY WEEK

To record at the same time everyday, select "Su Mo Tu We Th Fr Sa".
To record at the same time and day every week, select the desired day indication together with "EVERY WEEK" indication.

1 Press TIMER SET.
The program number (up to 6) appears. "1" indicates that you are making the first timer setting.

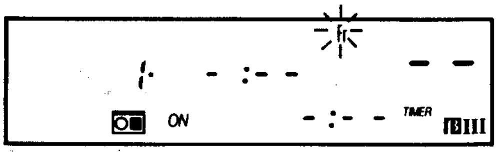
Blinks alternately



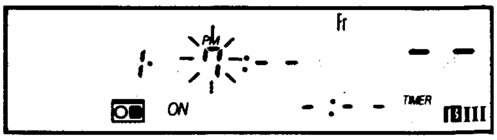
Program number

Turn-on indication

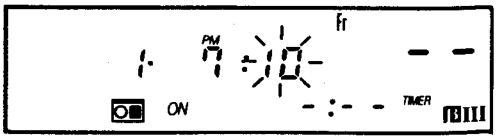
2 Set the day with the + or − button.



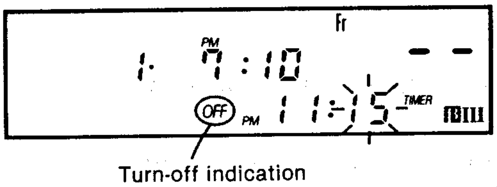
3 Press NEXT and set the turn-on hour with the + or − button.
Make sure that AM or PM is properly set.
AM 12:00 = midnight
PM 12:00 = noon



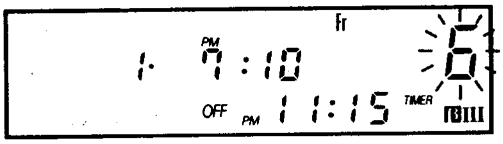
4 Press NEXT and set the minute with the + or − button.



5 Press NEXT and set the turn-off time as in steps **3** and **4**.



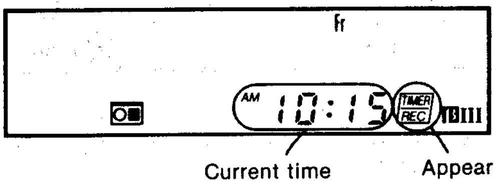
6 Press NEXT and set the channel to be recorded with the + or – button.



7 Press NEXT.
The tape counter and the current time will reappear.

To preset another program, press TIMER SET again and repeat steps **2** to **7**. Up to 6 program can be preset.

8 Press TIMER REC ON/OFF.
The power will be turned off and the recorder will be in the standby mode.



Recording will start automatically at the preset turn-on time and will stop at the preset turn-off time. The memory of the program except everyday or every week setting will be erased and the program positions preset in the timer will advance one by one.

NOTICE:
ONCE THE TIMER REC INDICATOR HAS LIT UP, only the functions of CHECK and TIMER REC ON/OFF on the recorder can be activated. To turn on the power again for the usual manual operations, press TIMER REC ON/OFF again so that the indicator turns off. This does "not" affect the memory of the timer. As long as you press it again, timer recording will be made exactly as preset.

To stop timer recording momentarily
Press **II** PAUSE.
To resume recording, press the button again within about 8 minutes.

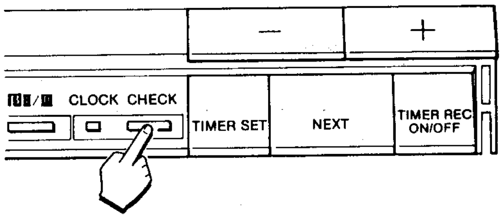
When the tape ends during timer recording
The tape stops but will not be rewound to the beginning.

To record the entire tape
Set the turn-off time to exactly the same time as the turn-on time. Recording will continue to the end of the tape, after which the recorder will be turned off.

To stop during a timer recording
Press TIMER REC ON/OFF. The recording will stop and the power will be turned off.

TO CHECK THE TIMER SETTING

Press CHECK. Every time you press CHECK, successive preset timer programs will be displayed.

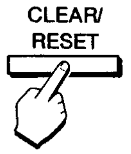


TO CHANGE A TIMER SETTING

1 Press CHECK until the program to be changed appears.
2 Press TIMER SET.
3 Press NEXT until the item to be changed blinks.
4 Change the setting with the + or – button.
5 Press NEXT until the time counter and the current time appear.

TO ERASE THE MEMORY OF A PARTICULAR PROGRAM POSITION

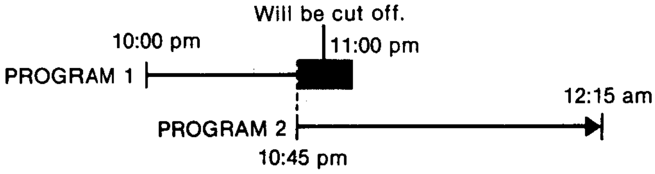
Press CHECK until the program to be erased appears and press CLEAR/RESET. The memory of the program will be erased.



NOTES ON TIMER RECORDING

Troubles when TIMER REC is pressed	Check
AUTO indication blinks in the window and the cassette will be ejected automatically.	The cassette inserted has the safety tab removed.
TIMER REC does not appear in the window.	The tape is at its end or no cassette is inserted.

When the presettings of your timer-activated recordings overlap
There will be no error indication to inform you of the overlap. Even if there is an overlap, a recording will be made.



The recording of program 2 will begin before program 1 is finished.

If a power interruption occurs during timer recording

If the clock shows "AM 12:00" and blinks
All the timer settings have been erased. Reset the clock and timer setting.
If the interruption occurs during the actual timer-recording, the recording will stop.

If the clock goes slow
An interruption of less than a few seconds will not affect the memory of the timer.
The timer memory will be retained and timer recording will be performed although the clock remains as it goes slow by the amount of the interruption.

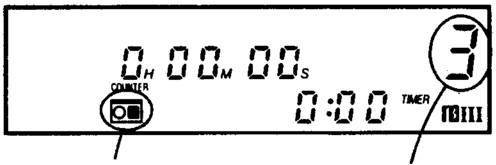
1-13. QUICK TIMER RECORDING

Use this function to begin recording a program immediately and to turn off the power automatically.
You can start timer recording immediately by pressing QUICK TIMER for up to 5 hours by 30 minutes. You can also use this function to extend the non-timer recording of a particular channel.

TO USE QUICK TIMER FROM THE TAPE STOP MODE

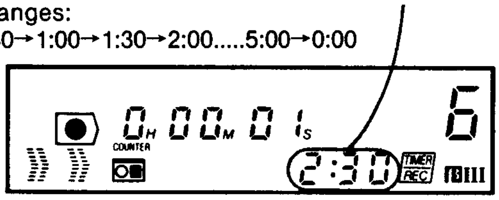
Make sure that the cassette is inserted.

1 Press QUICK TIMER.
While the channel number blinks, you can change the channel. If you do not advance to the next step, the recorder will turn off after about 30 seconds.



Cassette is inserted. Channel previously selected

2 Press QUICK TIMER again.
The recording will start instantly.
Choose the recording duration.
Every time you press QUICK TIMER, the indication changes:
0:30→1:00→1:30→2:00.....5:00→0:00



When the recording starts, the time indication decreases minute by minute to 0:00 and the recorder turns off automatically.

To stop a quick timer recording
Press TIMER REC ON/OFF. The power will be turned off as well.

TO USE QUICK TIMER WHILE RECORDING

Press QUICK TIMER as many times as required to choose recording duration. Recording will continue within the selected time duration.

Once the quick timer recording has started

No function button except for the following will activate:
QUICK TIMER.....to change the recording duration
TIMER REC.....to interrupt the quick timer recording
PAUSE.....to stop the quick timer recording momentarily
CHECK.....to check the timer programs preset

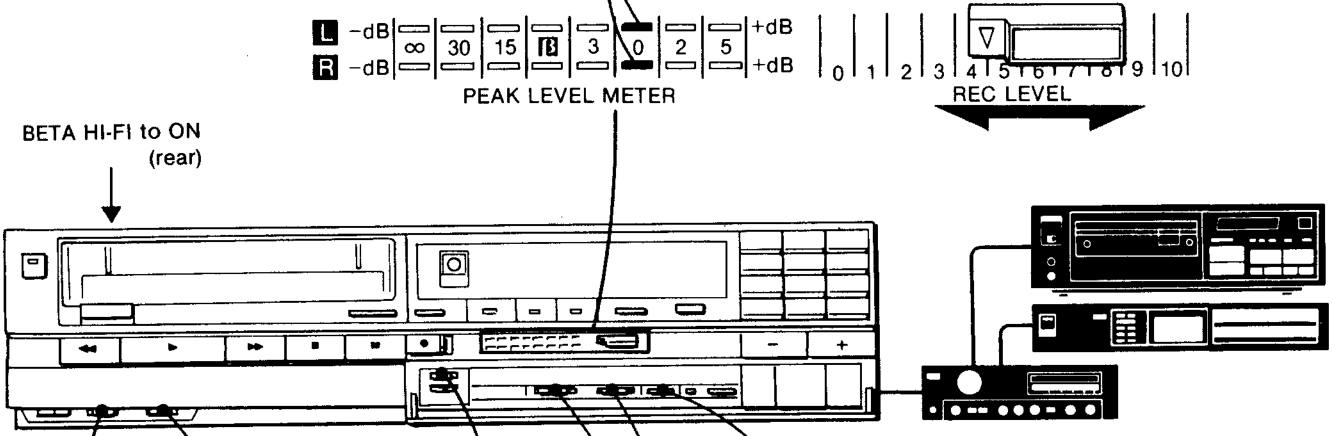
When a power interruption occurs during quick timer recording
The recording stops.
It will start again if the power is supplied within few seconds.

When the tape comes to an end before the preset turn-off time
The recording stops and the recorder will be automatically turned off after about 30 seconds.

1-14. BETA HI-FI AUDIO RECORDING

RECORDING FROM YOUR AUDIO SYSTEM

To connect the recorder to your audio system, see page 14.
Set the switches as shown below. To start recording, insert a cassette and slide ● REC to the right.



Manually adjust the recording level. Set REC LEVEL so that the first red element lights up only at the highest signal level.

BETA HI-FI to ON (rear)

INPUT SELECT to LINE AUDIO

SUPER BETA to ON

βII mode is recommended for audio recording.

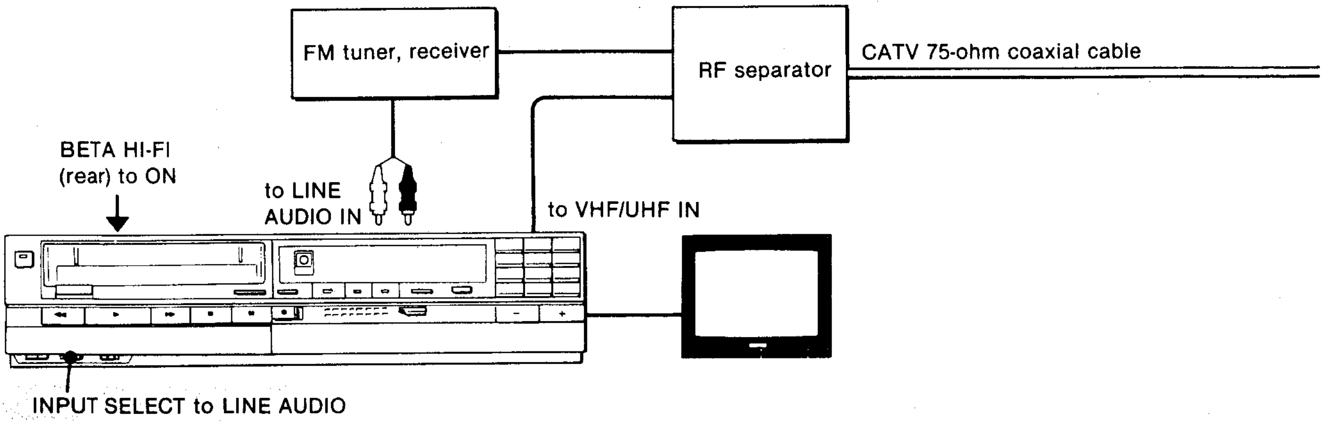
When recording from an FM tuner, set MPX FILTER to ON. (If your FM tuner has an internal MPX filter, set to OFF.)

MONITOR SELECT to HI-FI and STEREO for monitoring the sound to be recorded.

FM SIMULCAST RECORDING

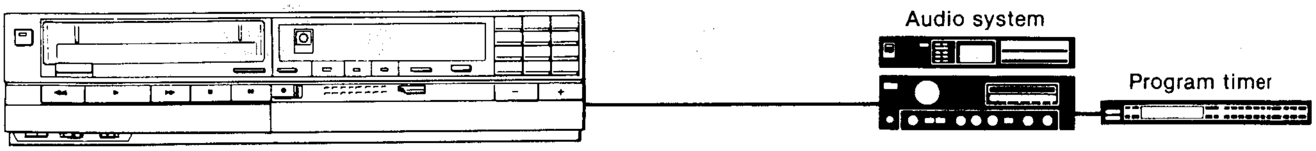
By connecting an FM stereo tuner to the LINE AUDIO IN jacks besides the CATV cable connection, you can record a CATV program with stereo sound, such as MTV (music TV), whose audio signals are divided into the FM tuner from the cable.

For FM simulcast recording, set INPUT SELECT to **LINE AUDIO.** The sound from the FM tuner is recorded on the video track (Beta hi-fi recording), while the TV sound is recorded on the conventional audio track.


FM tuner, receiver
RF separator
CATV 75-ohm coaxial cable
BETA HI-FI (rear) to ON
to LINE AUDIO IN
to VHF/UHF IN
INPUT SELECT to LINE AUDIO

TIMER-ACTIVATED FM RECORDING

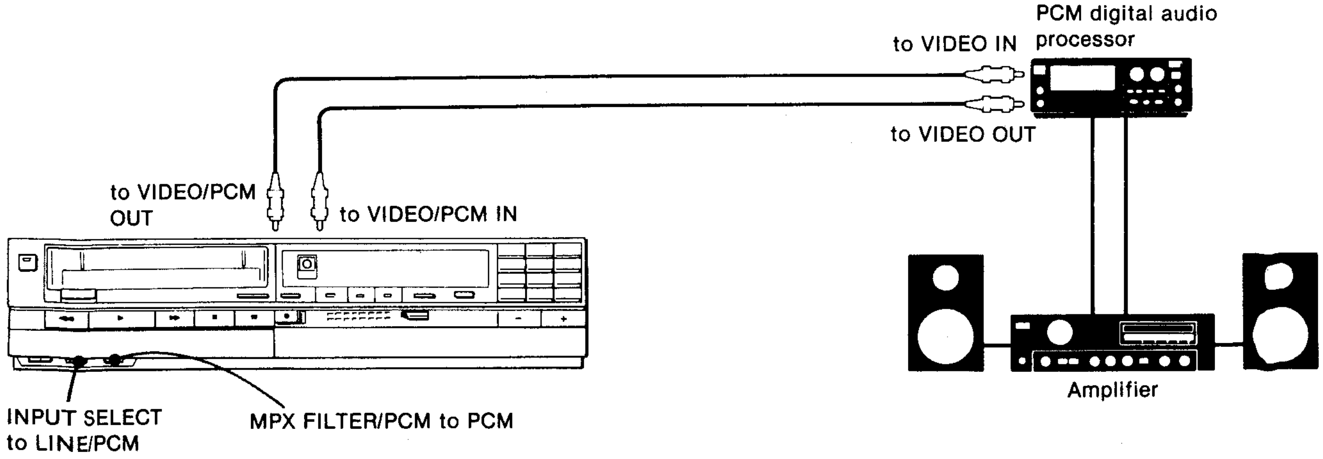
Use an optional program timer to turn the audio system on and off.


Audio system
Program timer

The settings of the controls is the same as in "RECORDING FROM YOUR AUDIO SYSTEM".
Set the recorder's timer and a program timer to the same turn-on and turn-off time. The settings on the recorder's timer are the same as in "TIMER-ACTIVATED RECORDING" on page 24.

1-15. PCM RECORDING AND PLAYBACK

Connect a PCM digital audio processor as shown below.

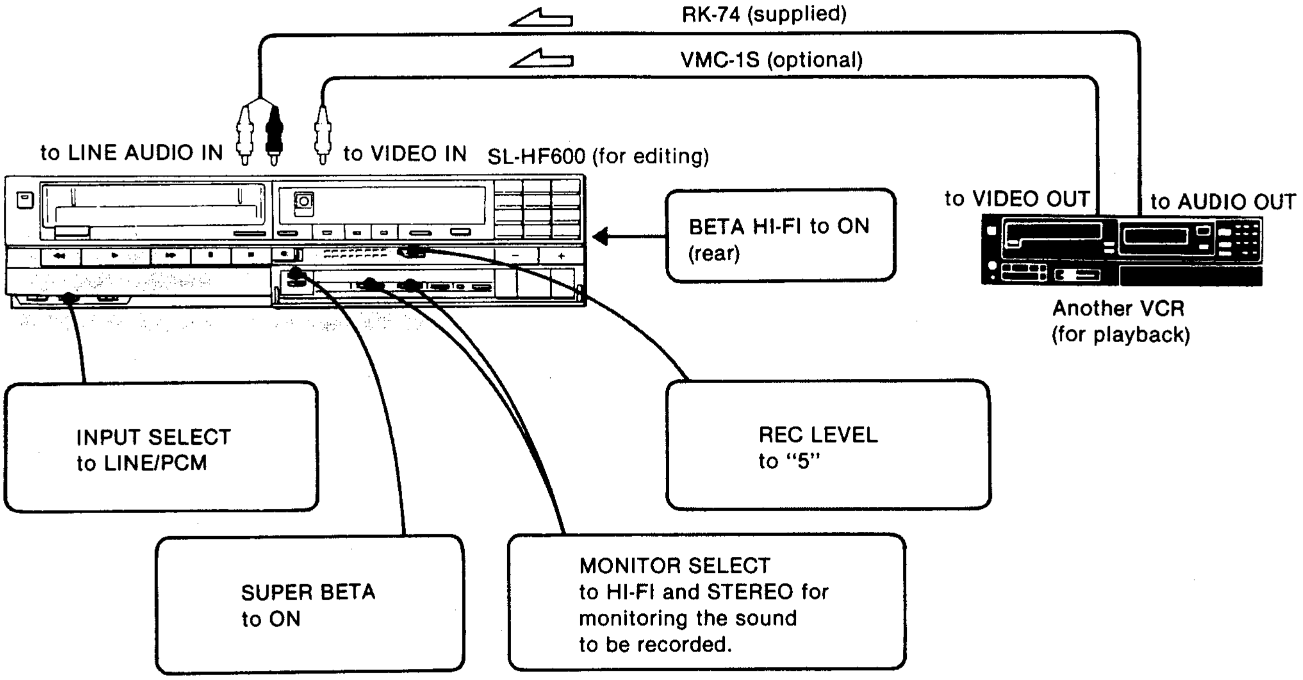

PCM digital audio processor
to VIDEO IN
to VIDEO OUT
to VIDEO/PCM OUT
to VIDEO/PCM IN
Amplifier
INPUT SELECT to LINE/PCM
MPX FILTER/PCM to PCM

For PCM recording, set INPUT SELECT to **LINE/PCM** and MPX FILTER/PCM to **PCM.** For optimum results, use a video cassette with a model number of L-500 or below (L-250, L-125, etc.) and select βII recording mode. For details, refer to the instruction manual furnished with the digital audio processor.

1-16. EDITING A TAPE

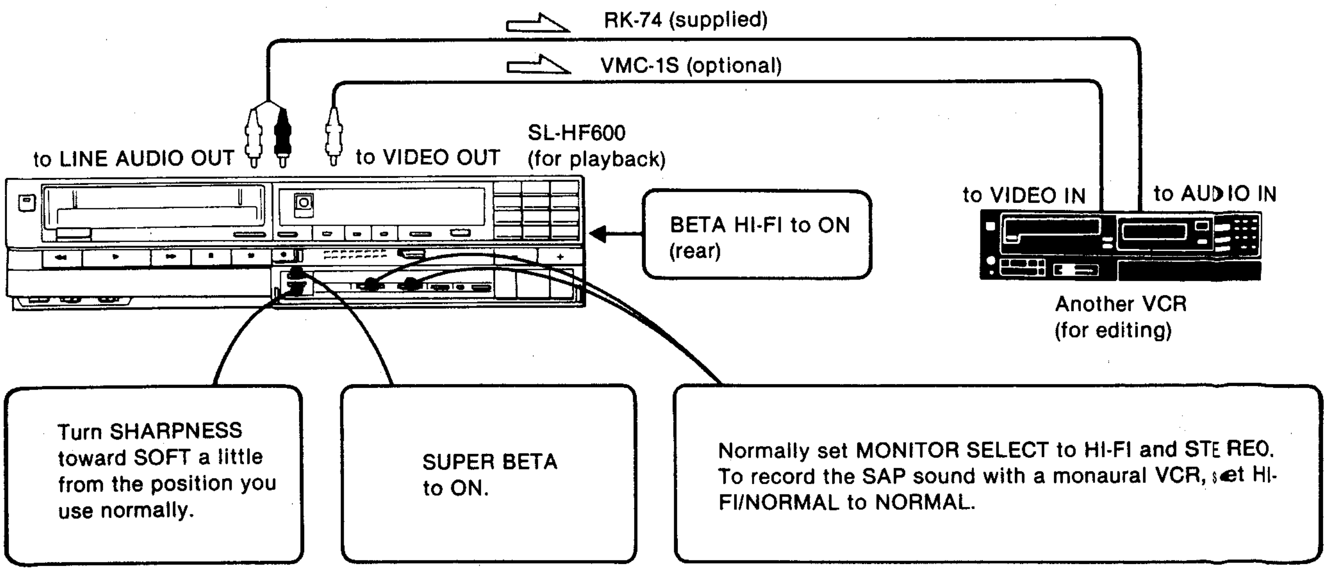
To edit a home movie tape, you will need two video cassette recorders.
Set the controls as shown below.

TO EDIT FROM ANOTHER VCR TO THE SL-HF600


RK-74 (supplied)
VMC-1S (optional)
to LINE AUDIO IN
to VIDEO IN
SL-HF600 (for editing)
to VIDEO OUT
to AUDIO OUT
BETA HI-FI to ON (rear)
Another VCR (for playback)
INPUT SELECT to LINE/PCM
REC LEVEL to "5"
SUPER BETA to ON
MONITOR SELECT to HI-FI and STEREO for monitoring the sound to be recorded.

To start editing, set the other VCR in playback mode and the SL-HF600 in recording mode.

TO EDIT FROM THE SL-HF600 TO ANOTHER VCR

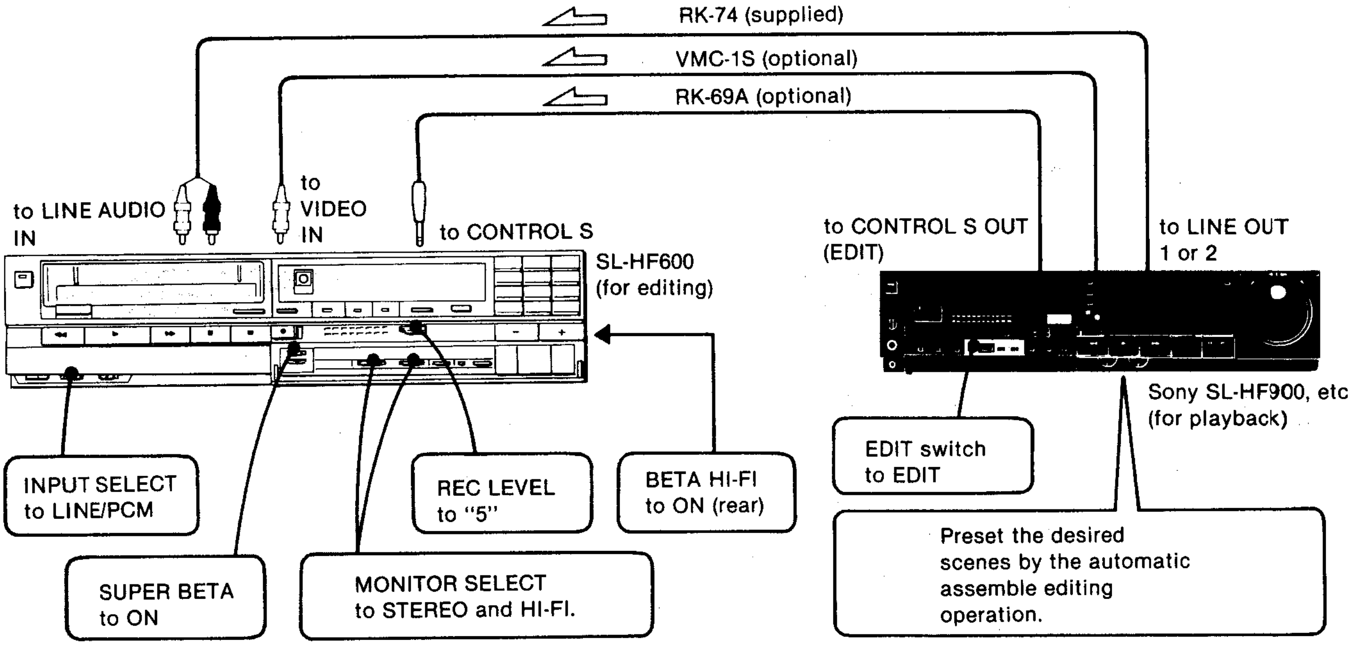

RK-74 (supplied)
VMC-1S (optional)
to LINE AUDIO OUT
to VIDEO OUT
SL-HF600 (for playback)
BETA HI-FI to ON (rear)
to VIDEO IN
to AUDIO IN
Another VCR (for editing)
Turn SHARPNESS toward SOFT a little from the position you use normally.
SUPER BETA to ON.
Normally set MONITOR SELECT to HI-FI and STEREO. To record the SAP sound with a monaural VCR, set HI-FI/NORMAL to NORMAL.

To start editing, set the SL-HF600 in playback mode and the other VCR in recording mode.

CAUTION
Television programs, films, video tapes and other materials may be copyrighted.
Unauthorized duplication of such material may be contary to the provisions of the copyright laws.

TO EDIT FROM A VCR EQUIPPED WITH THE CONTROL S (EDIT) OUTPUT

Only the particular scenes preset on the playback VCR will be edited (automatic assemble editing). Recording start/stop on the SL-HF600 can be activated in synchronization with playback start/stop on the playback VCR.


RK-74 (supplied)
VMC-1S (optional)
RK-69A (optional)
to LINE AUDIO IN
to VIDEO IN
to CONTROL S
SL-HF600 (for editing)
to CONTROL S OUT (EDIT)
to LINE OUT 1 or 2
Sony SL-HF900, etc (for playback)
INPUT SELECT to LINE/PCM
REC LEVEL to "5"
BETA HI-FI to ON (rear)
EDIT switch to EDIT
Preset the desired scenes by the automatic assemble editing operation.
SUPER BETA to ON
MONITOR SELECT to STEREO and HI-FI.

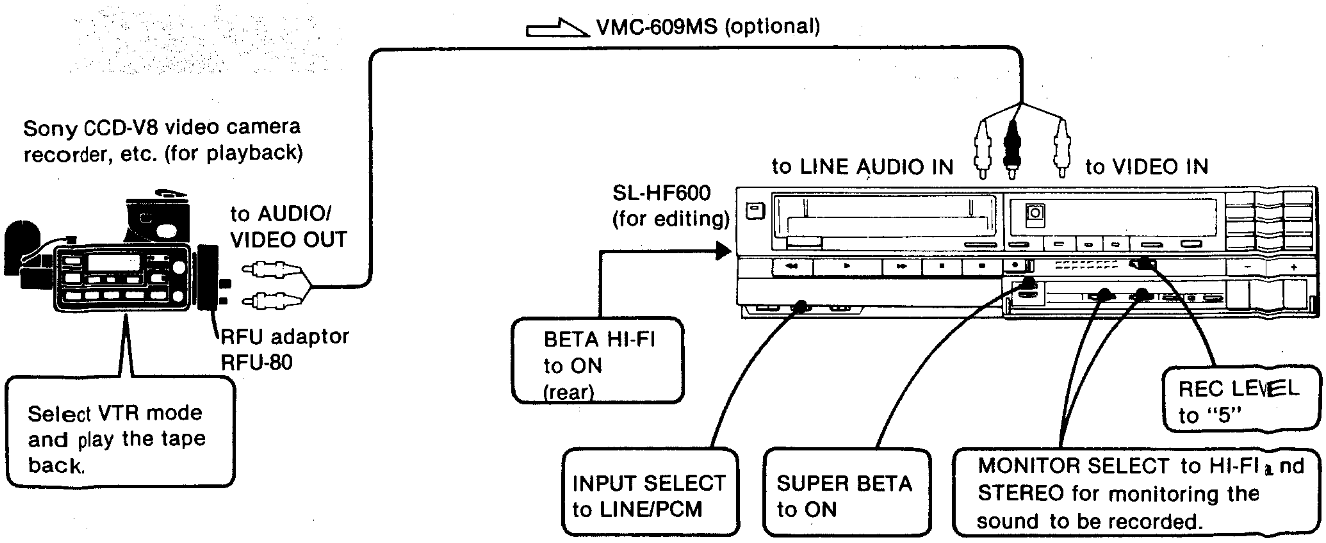
To start editing, set the SL-HF600 in recording pause mode and then follow the instruction manual of the playback VCR for the automatic assemble editing.

- The optional RM-E100 video editing controller allows easier editing between two VCRs.
- The required connecting cords may differ depending on VCRs. Refer to the instruction manual of the VCR.

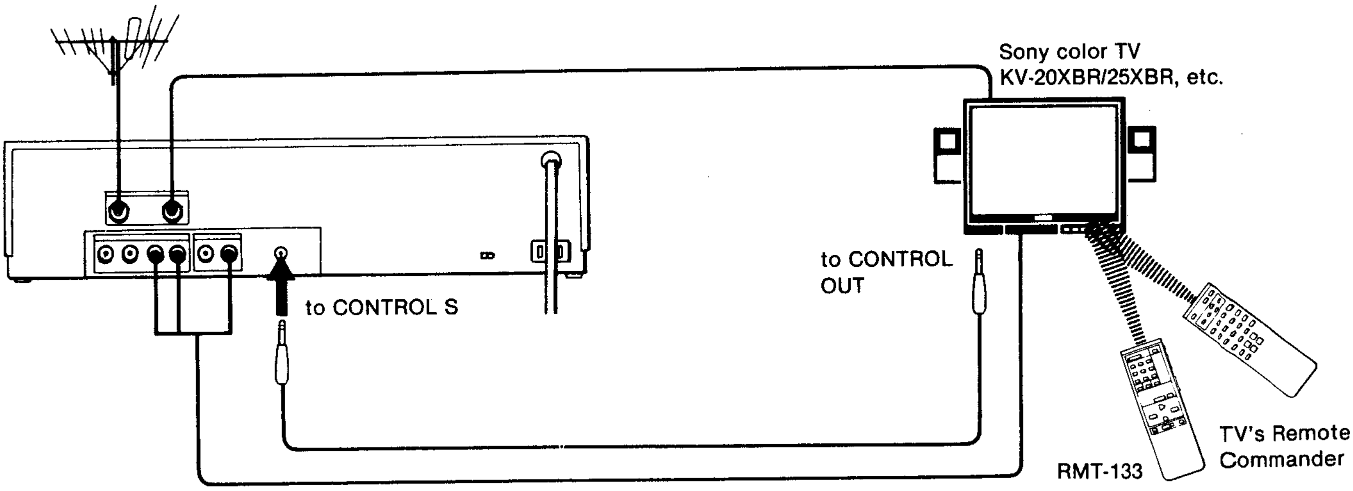
Note
Avoid repetition of editing tapes, as the picture and tone quality will be impaired noticeably for newly edited tapes.

TO EDIT FROM A VIDEO CAMERA RECORDER

An 8 mm format cassette filmed with a video camera recorder can be edited to a β format cassette.


VMC-609MS (optional)
Sony CCD-V8 video camera recorder, etc. (for playback)
to AUDIO/ VIDEO OUT
RFU adaptor RFU-80
Select VTR mode and play the tape back.
to LINE AUDIO IN
to VIDEO IN
SL-HF600 (for editing)
BETA HI-FI to ON (rear)
REC LEVEL to "5"
INPUT SELECT to LINE/PCM
SUPER BETA to ON
MONITOR SELECT to HI-FI and STEREO for monitoring the sound to be recorded.

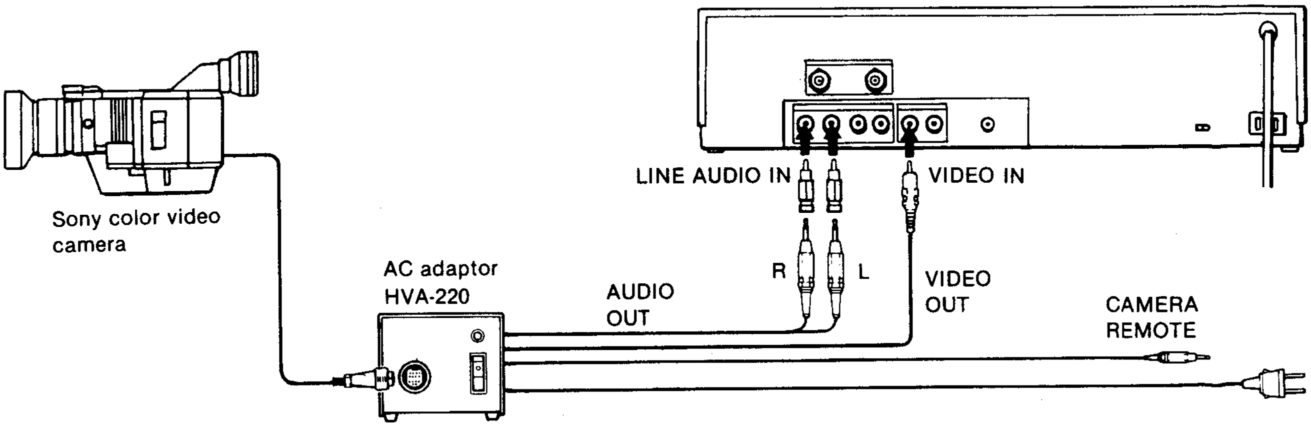
Use of the CONTROL S input jack
If this jack is connected to the CONTROL (S) OUT jack of a Sony color TV or TV tuner, this recorder can be controlled by pointing the supplied RMT-133 Remote Commander toward the remote sensor on the color TV or TV tuner.


Sony color TV
KV-20XBR/25XBR, etc.
to CONTROL OUT
to CONTROL S
TV's Remote Commander
RMT-133

1-17. CAMERA RECORDING

CONNECTIONS

- The camera must conform to American TV (EIA) standards.
- The use of a Sony HVA-220 ac adaptor is required.


LINE AUDIO IN
VIDEO IN
Sony color video camera
AC adaptor HVA-220
AUDIO OUT
R
L
VIDEO OUT
CAMERA REMOTE

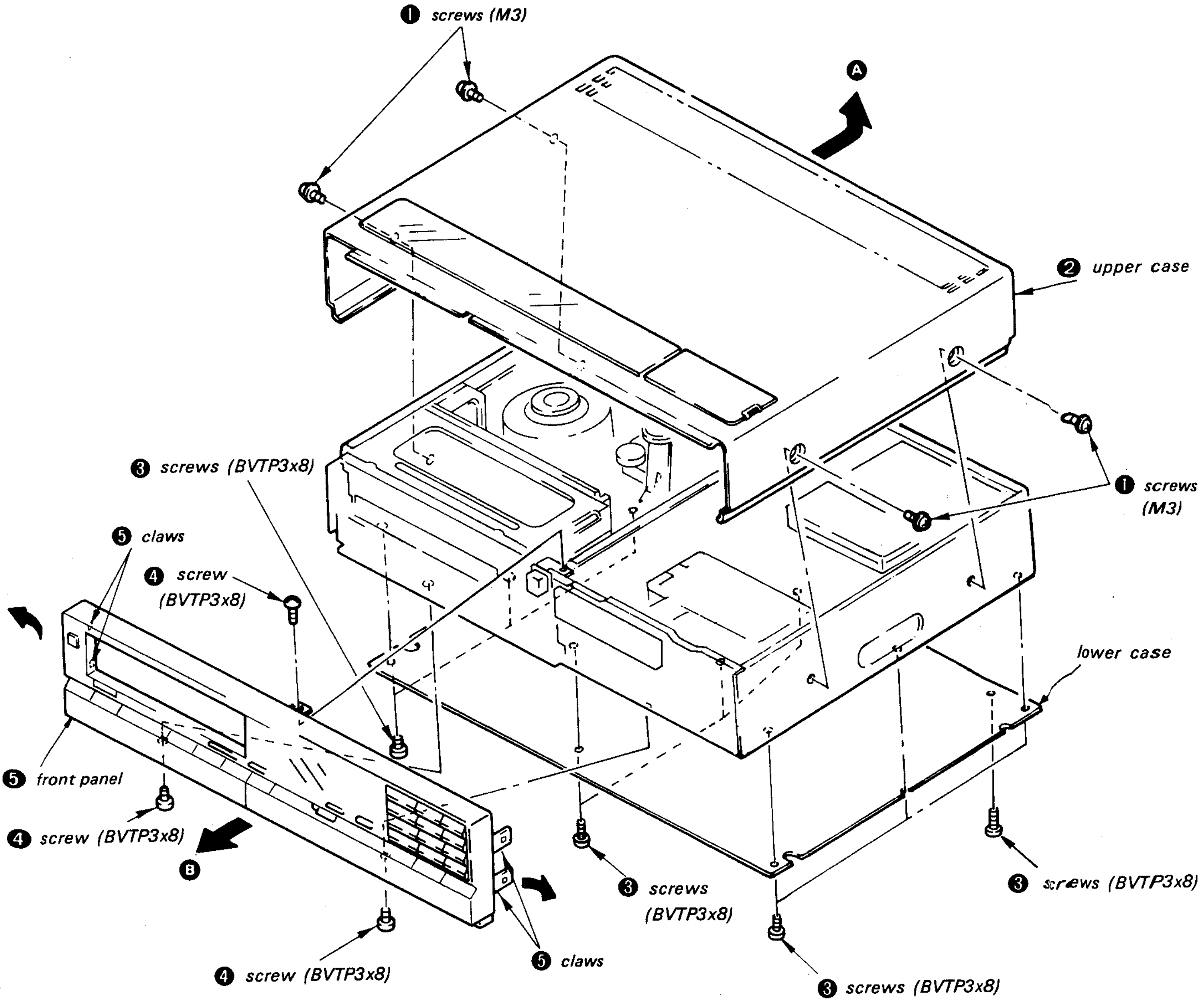
OPERATION

Set INPUT on the recorder to LINE/PCM.
To start recording, slide REC on the recorder or on the Remote Commander to the right.
To stop recording, press ■ STOP on the recorder or on the Remote Commander.
To stop recording momentarily, press ❚❚ PAUSE on the recorder or on the Commander.
The tape run/stop button on your camera will not function with this recorder.

SECTION 2
DISASSEMBLY

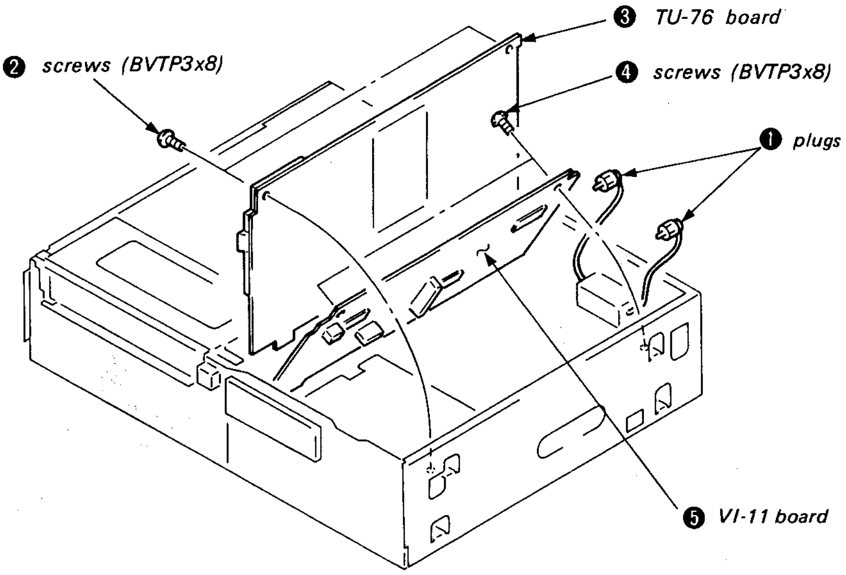
2-1. DISASSEMBLY OF CABINET

❶ Remove the four case set screws.
❷ Remove the upper case in the direction indicated by the arrow 🅐.
❸ Remove the ten screws (BVTP3×8), then remove the lower case.
❹ Remove the three screws (BVTP3×8).
❺ Remove the front panel in the direction indicated by the arrow 🅑.


❶ screws (M3)
🅐
❷ upper case
❶ screws (M3)
❸ screws (BVTP3x8)
❺ claws
❹ screw (BVTP3x8)
lower case
❺ front panel
❹ screw (BVTP3x8)
🅑
❸ screws (BVTP3x8)
❸ screws (BVTP3x8)
❺ claws
❹ screw (BVTP3x8)
❸ screws (BVTP3x8)

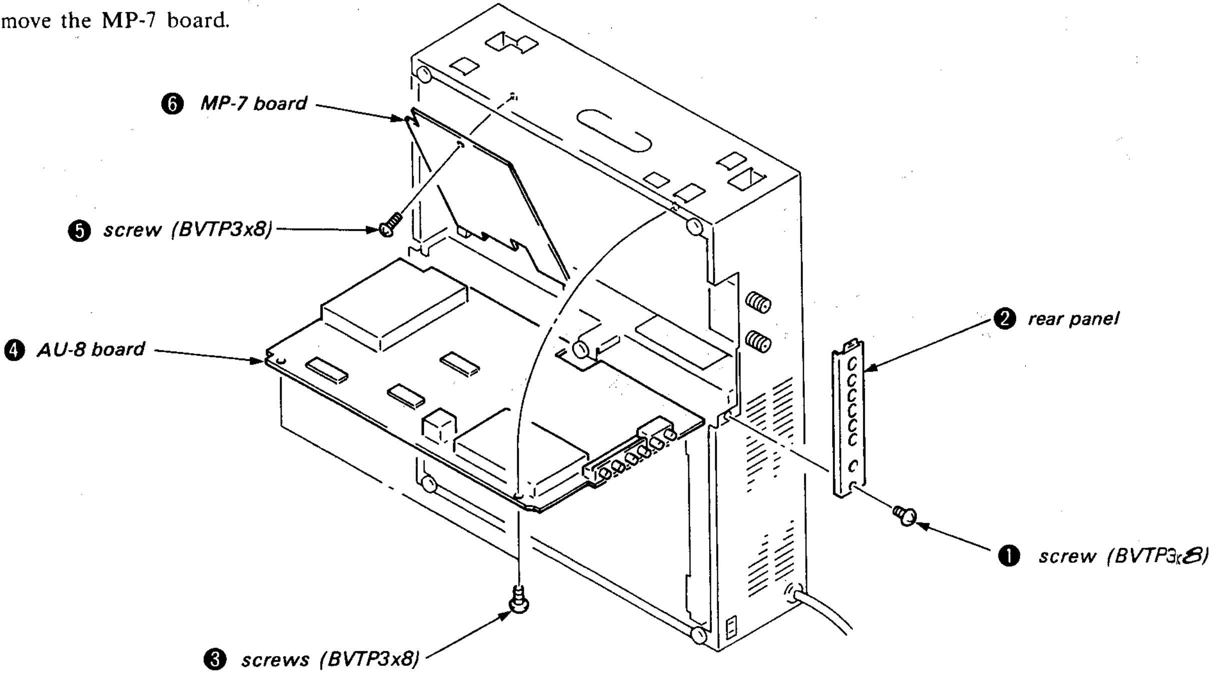
2-2. REMOVAL OF THE TU-76 BOARD AND VI-11 BOARD

❶ Pull out the two plugs.
❷ Remove the two screws (BVTP3×8).
❸ Remove the TU-76 board.
❹ Remove the two screws (BVTP3×8).
❺ Remove the VI-11 board.


❸ TU-76 board
❷ screws (BVTP3x8)
❹ screws (BVTP3x8)
❶ plugs
❺ VI-11 board

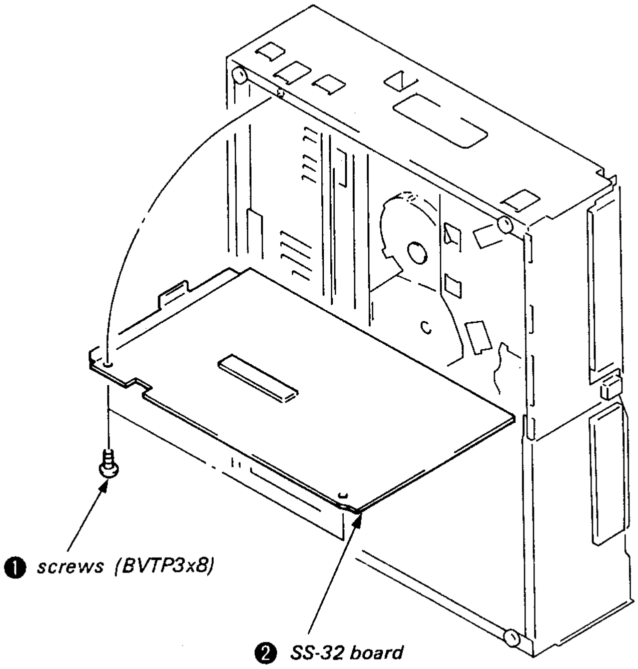
2-3. REMOVAL OF THE AU-8 BOARD AND MP-7 BOARD

❶ Remove the screw (BVTP3×8).
❷ Remove the rear panel.
❸ Remove the two screws (BVTP3×8).
❹ Remove the AU-8 board.
❺ Remove the one screw (BVTP3×8).
❻ Remove the MP-7 board.


❻ MP-7 board
❺ screw (BVTP3x8)
❷ rear panel
❹ AU-8 board
❶ screw (BVTP3x8)
❸ screws (BVTP3x8)

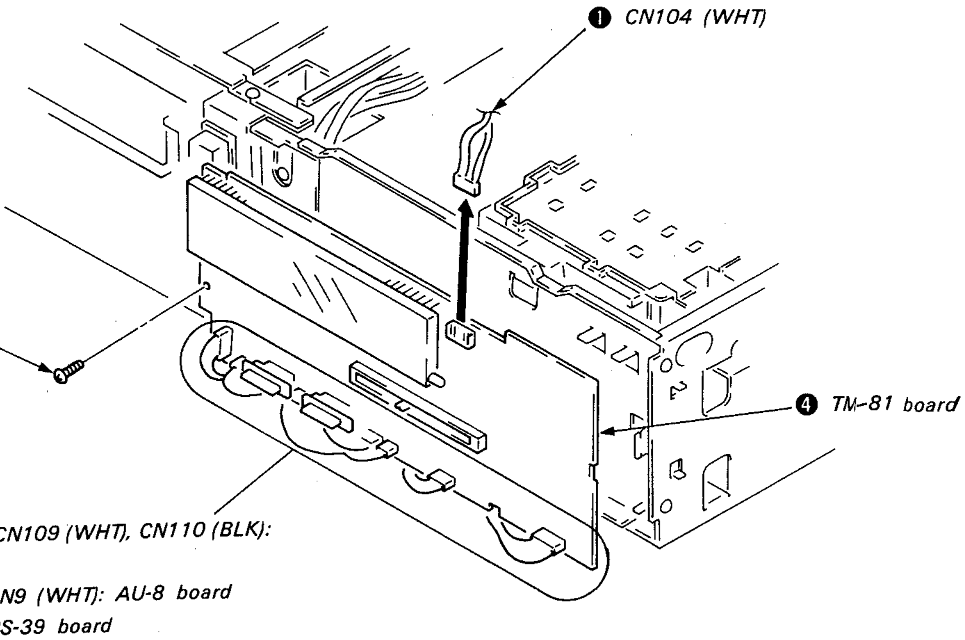
2-4. REMOVAL OF THE SS-32 BOARD

❶ Remove the two screws (BVTP3×8).
❷ Remove the SS-32 board.


❶ screws (BVTP3x8)
❷ SS-32 board

2-5. REMOVAL OF THE TM-81 BOARD

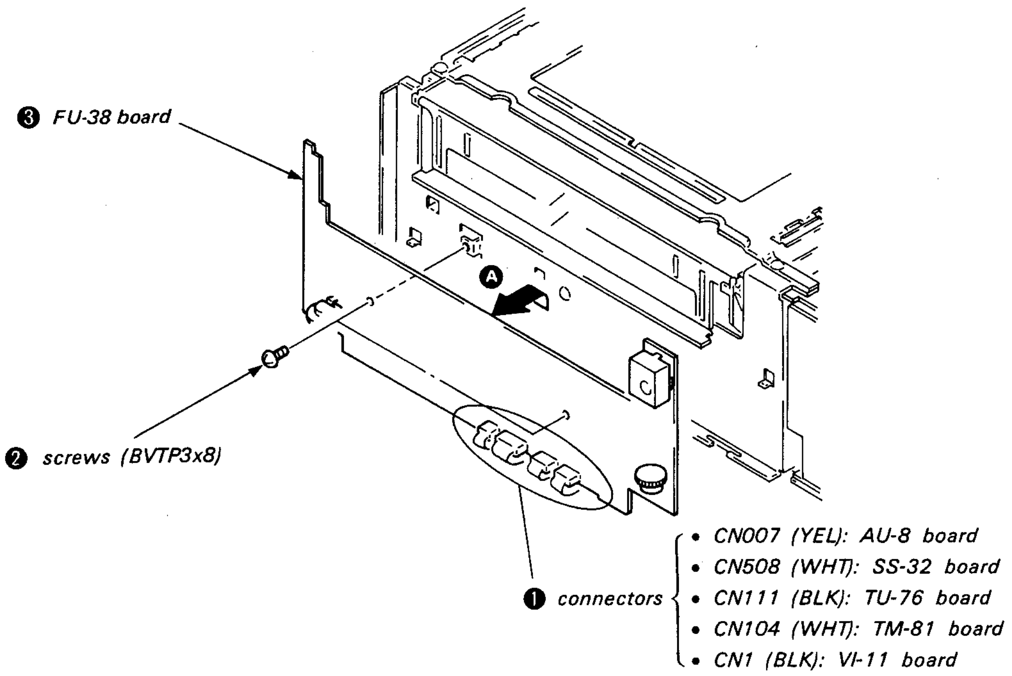
❶ Pull out the connector CN104.
❷ Pull out the seven connectors.
❸ Remove the one screw (BVTP3×8).
❹ Remove the TM-81 board.


❶ CN104 (WHT)
❸ screw (BVTP3x8)
❹ TM-81 board

❷ connectors
- CN101 (BLK), CN109 (WHT), CN110 (BLK): TU-76 board
- CN3 (WHT), CN9 (WHT): AU-8 board
- CN5 (WHT): PS-39 board
- CN14 (RED): SS-32 board

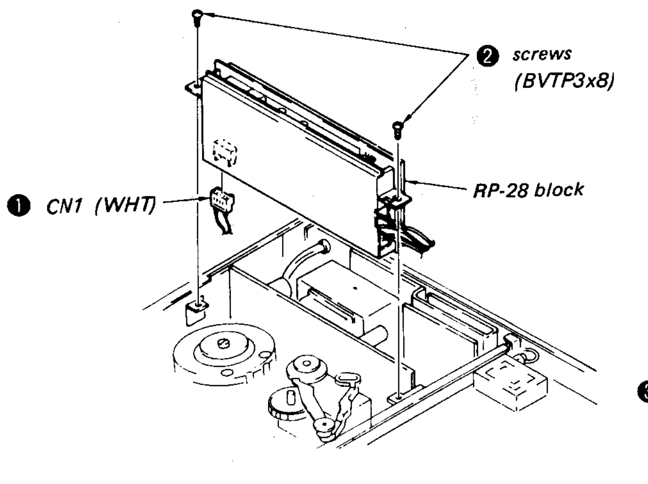
2-6. REMOVAL OF THE FU-38 BOARD

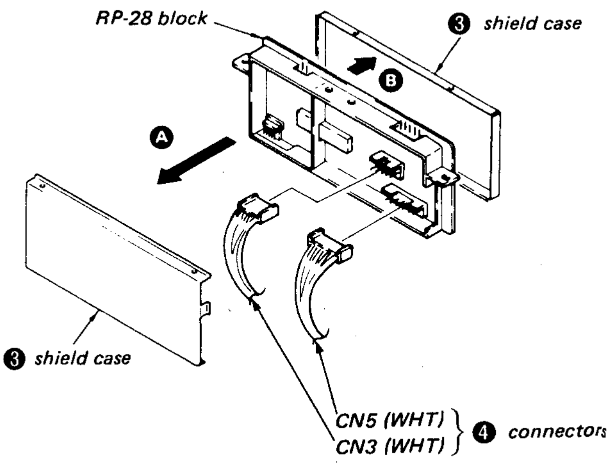
❶ Pull out the five connectors.
❷ Remove the two screws (BVTP3×8).
❸ Remove the FU-38 board in the direction indicated by the arrow Ⓐ.


❸ FU-38 board
Ⓐ
❷ screws (BVTP3x8)
❶ connectors
• CN007 (YEL): AU-8 board
• CN508 (WHT): SS-32 board
• CN111 (BLK): TU-76 board
• CN104 (WHT): TM-81 board
• CN1 (BLK): VI-11 board

2-7. REMOVAL OF THE RP-28 BOARD

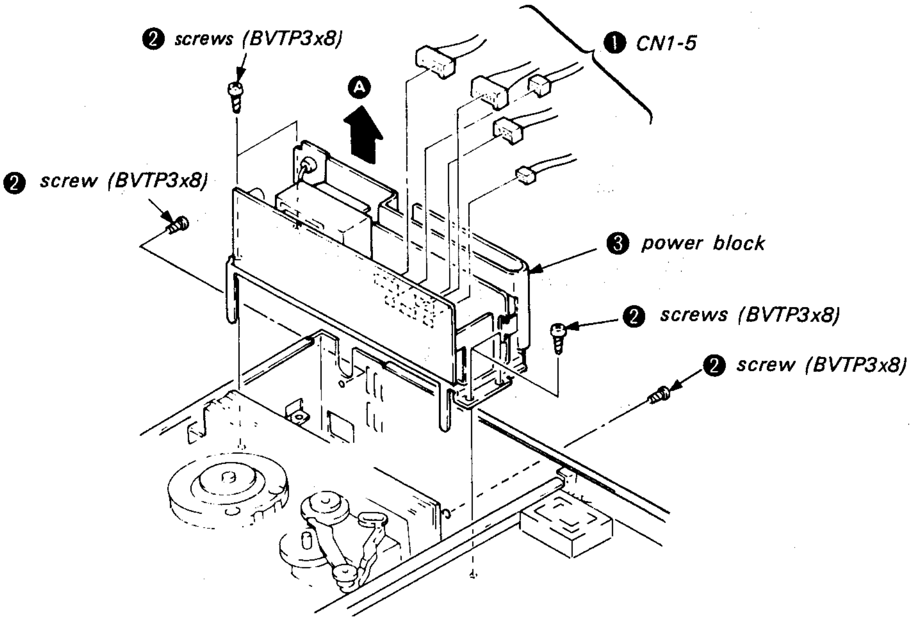
❶ Pull out the connector CN1.
❷ Remove the two screws (BVTP3×8).
❸ Remove the two shield cases in the direction indicated by the arrows Ⓐ and Ⓑ.
❹ Pull out the two connectors (CN3, CN5).


❷ screws (BVTP3x8)
RP-28 block
❶ CN1 (WHT)


RP-28 block
❸ shield case
Ⓑ
Ⓐ
❸ shield case
CN5 (WHT)
CN3 (WHT)
❹ connectors

2-8. REMOVAL OF THE POWER BLOCK

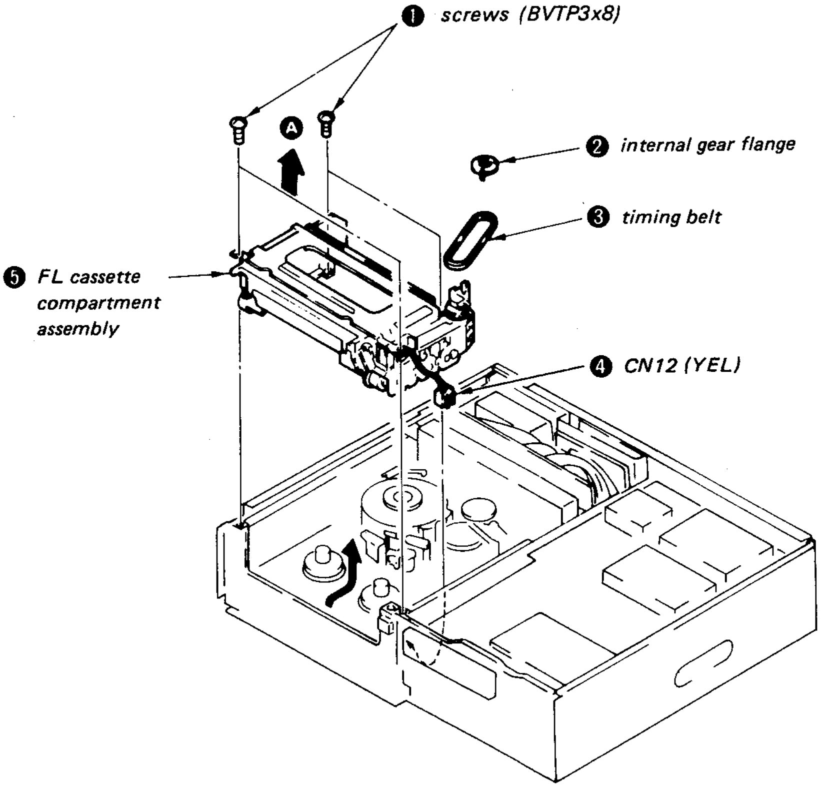
❶ Remove the five connectors (CN1-CN5).
❷ Remove the six screws (BVTP3×8).
❸ Remove the POWER block in the direction indicated by the arrow Ⓐ.



❷ screws (BVTP3x8)
Ⓐ
❶ CN1-5
❷ screw (BVTP3x8)
❸ power block
❷ screws (BVTP3x8)
❷ screw (BVTP3x8)

2-9. REMOVAL OF THE FL CASSETTE COMPARTMENT ASSEMBLY

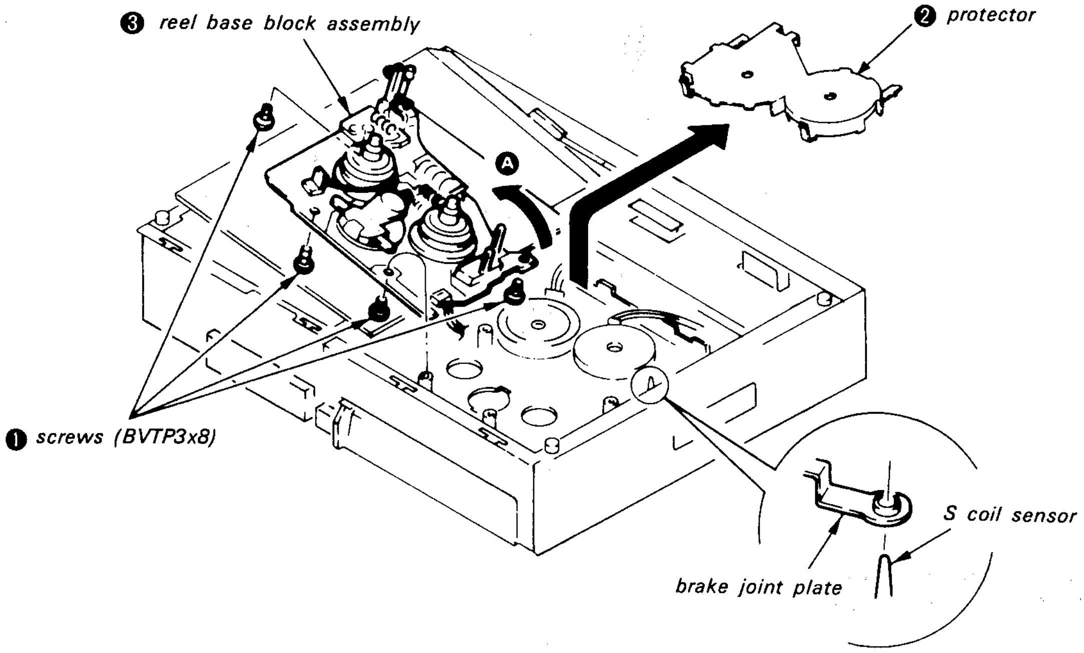
❶ Remove the four screws (BVTP3×8).
❷ Remove the internal gear flange.
❸ Remove the timing belt.
❹ Pull out the connector (CN12) from the SS-32 board.
❺ FL cassette compartment assembly in the direction indicated by the arrow Ⓐ.



❶ screws (BVTP3x8)
Ⓐ
❷ internal gear flange
❸ timing belt
❺ FL cassette compartment assembly
❹ CN12 (YEL)

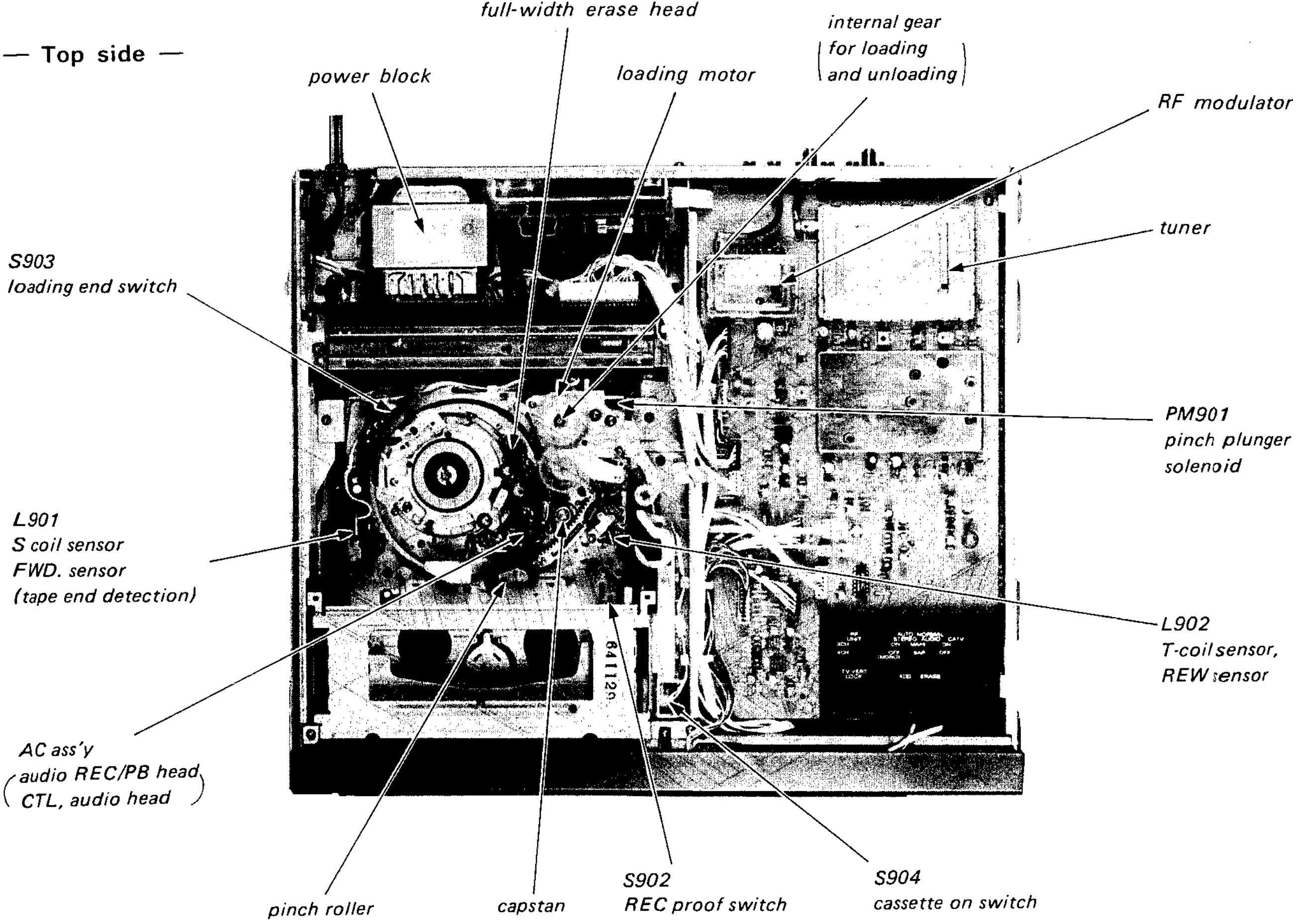
2-10. REMOVAL OF THE REEL BASE BLOCK ASSEMBLY

❶ Remove the four screws (BVTP3×8).
❷ Remove the protector.
❸ Remove the reel base block assembly in the direction indicated by the arrow Ⓐ.

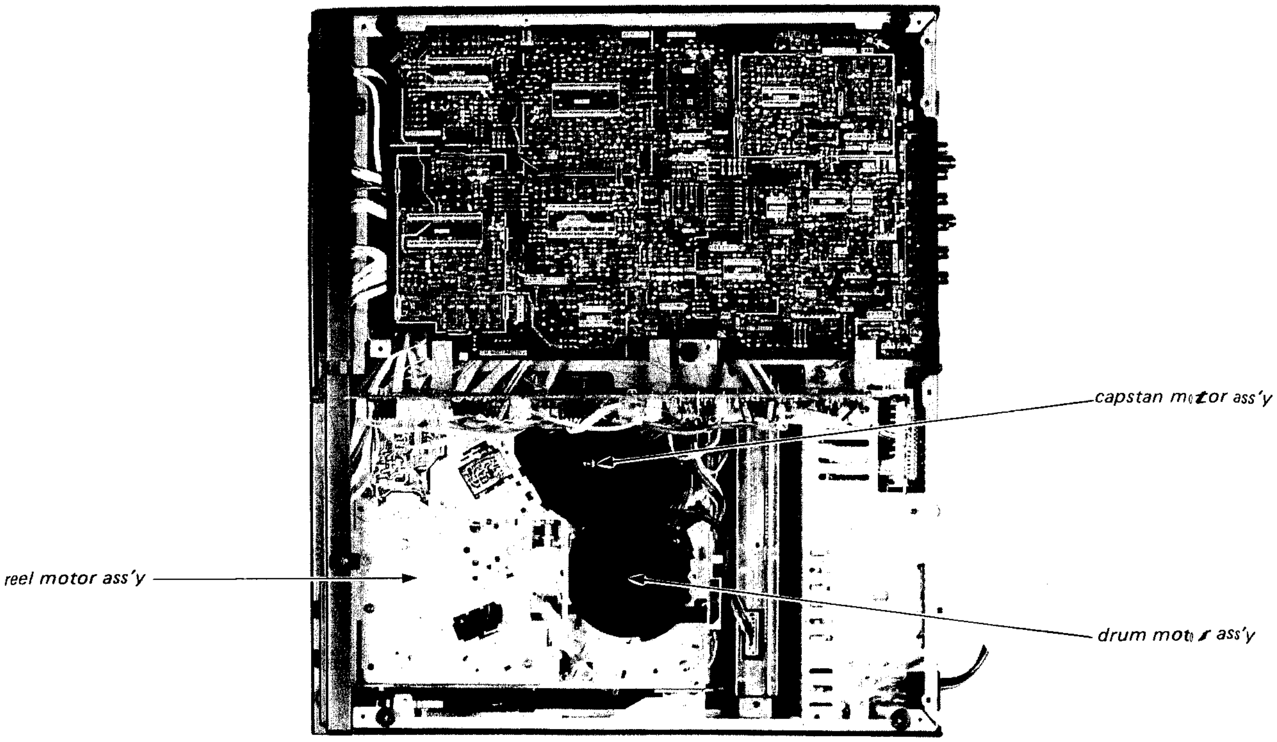

❸ reel base block assembly
❷ protector
Ⓐ
❶ screws (BVTP3x8)
S coil sensor
brake joint plate

2-11. INTERNAL VIEWS

— Top side —

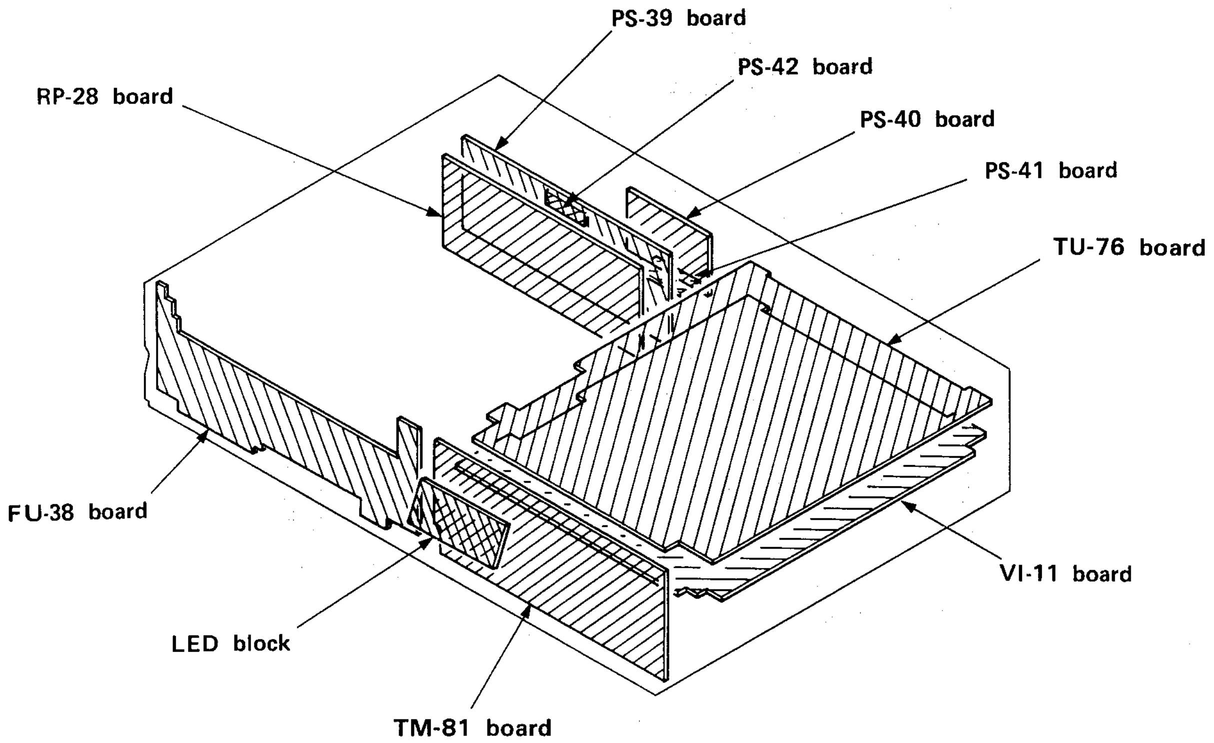

full-width erase head
internal gear (for loading and unloading)
power block
loading motor
RF modulator
tuner
S903 loading end switch
PM901 pinch plunger solenoid
L901 S coil sensor FWD. sensor (tape end detection)
L902 T-coil sensor, REW sensor
AC ass'y (audio REC/PB head CTL, audio head)
pinch roller
capstan
S902 REC proof switch
S904 cassette on switch

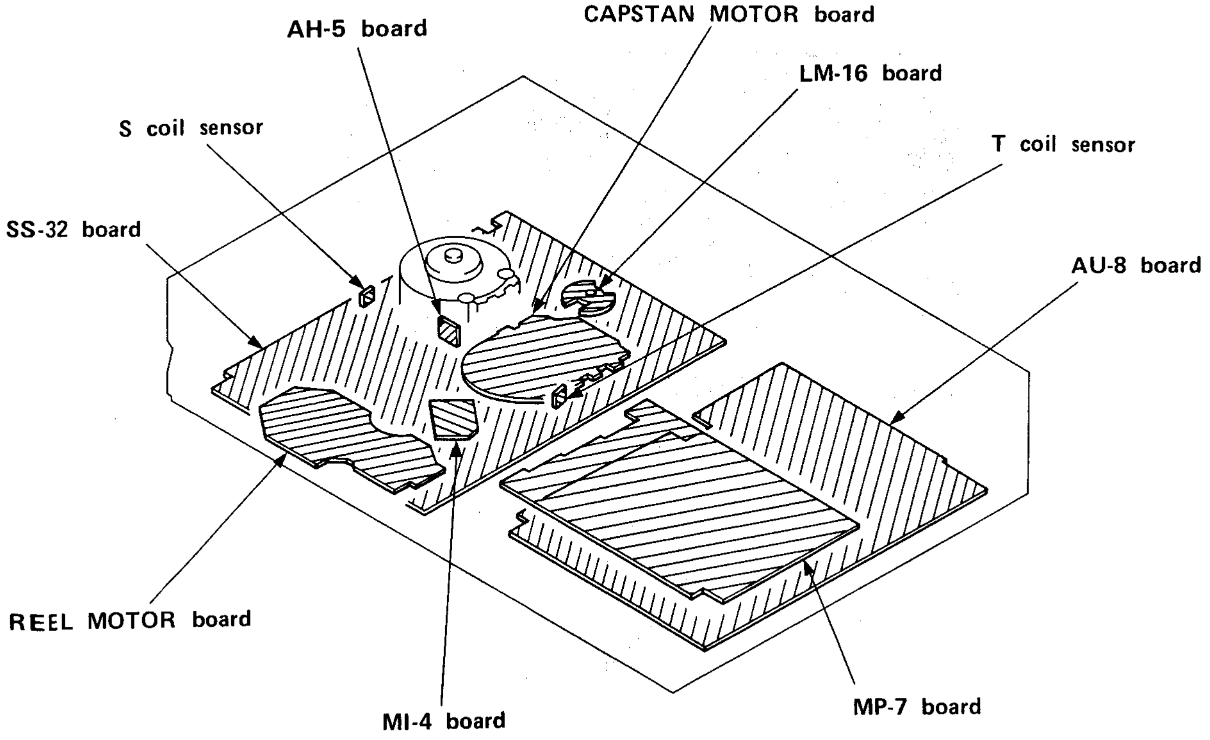
— Bottom side —


capstan motor ass'y
reel motor ass'y
drum motor ass'y

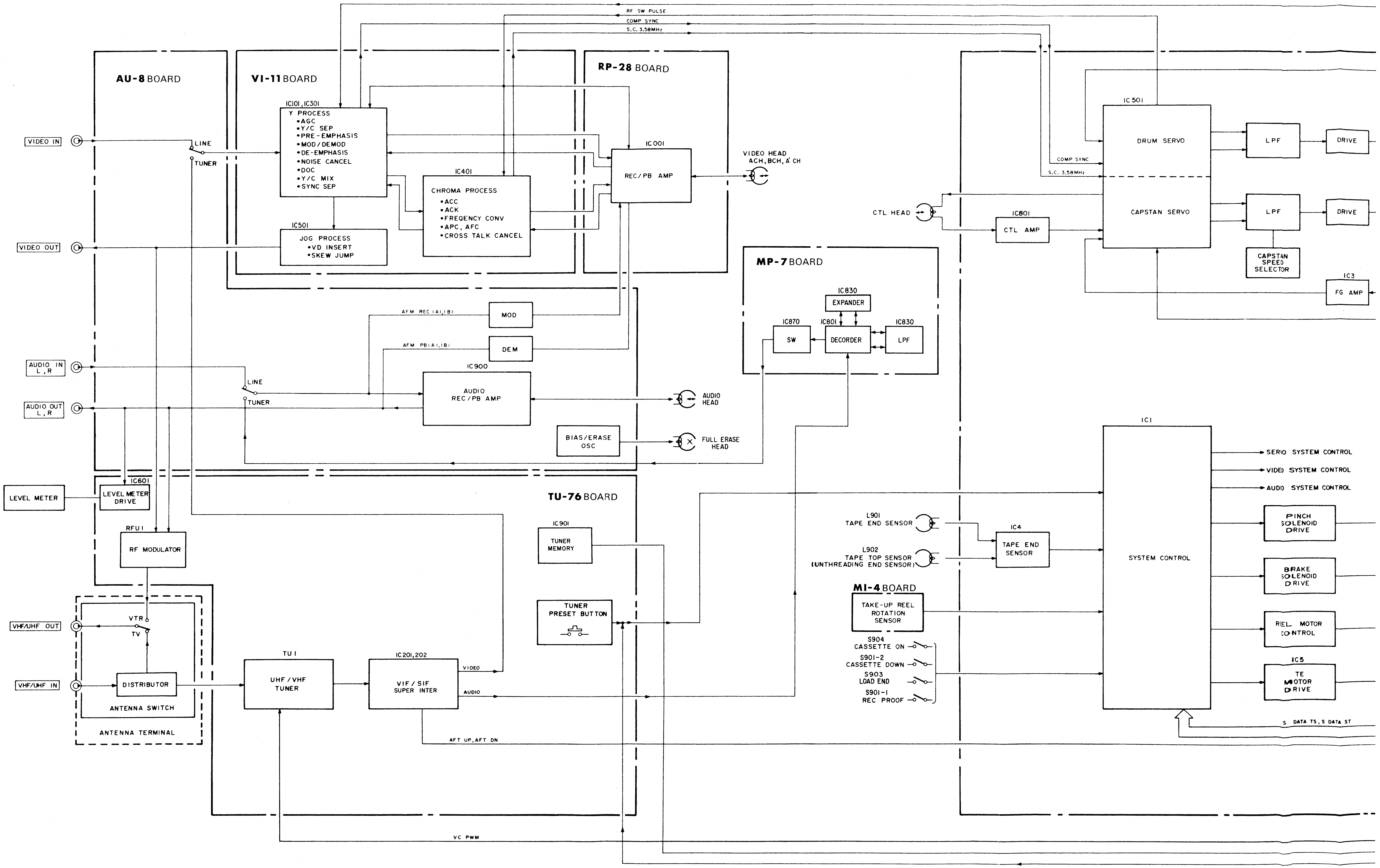
SECTION 3
DIAGRAMS

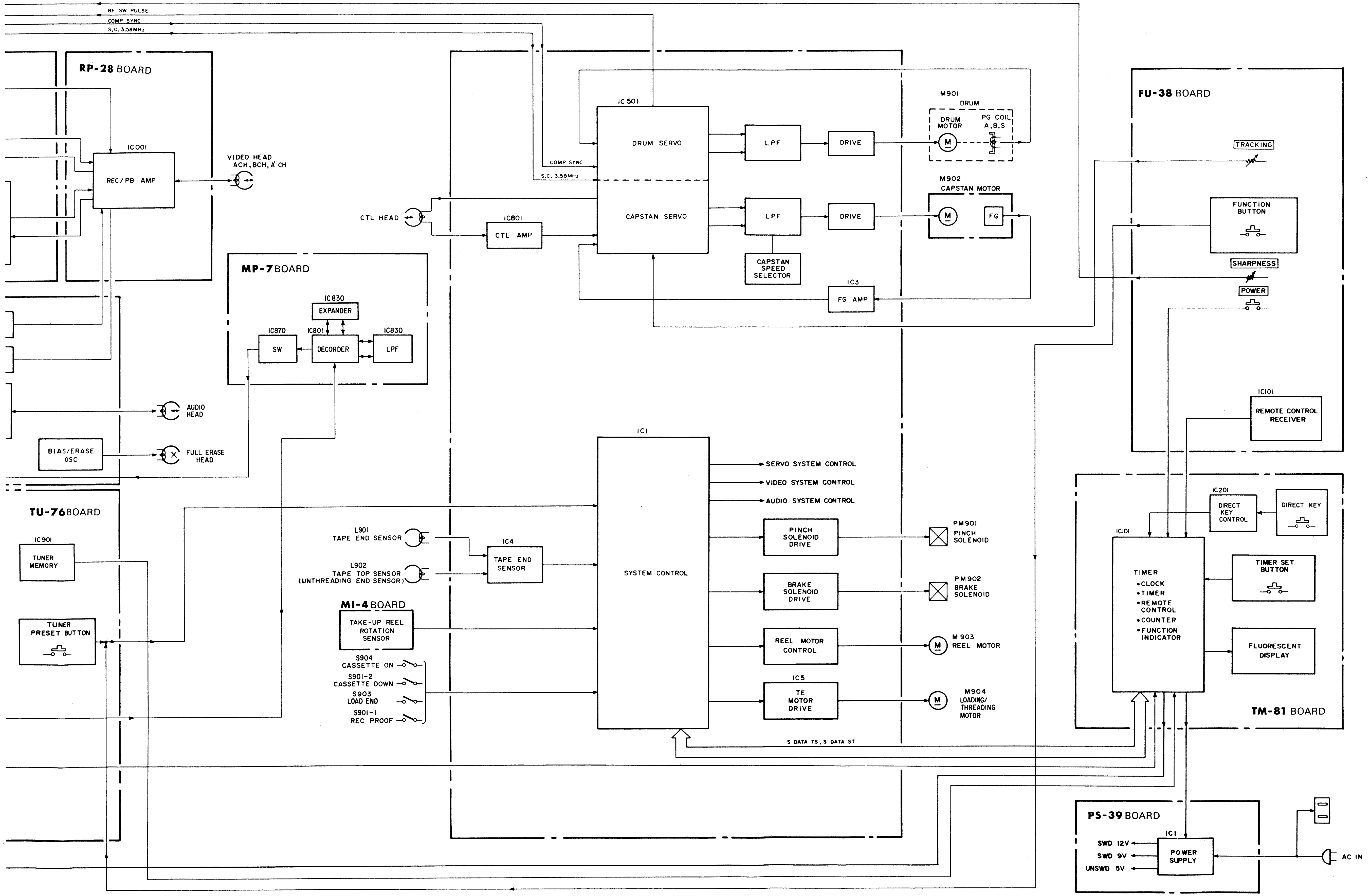
3-1. CIRCUIT BOARDS LOCATION


PS-39 board
PS-42 board
RP-28 board
PS-40 board
PS-41 board
TU-76 board
FU-38 board
VI-11 board
LED block
TM-81 board

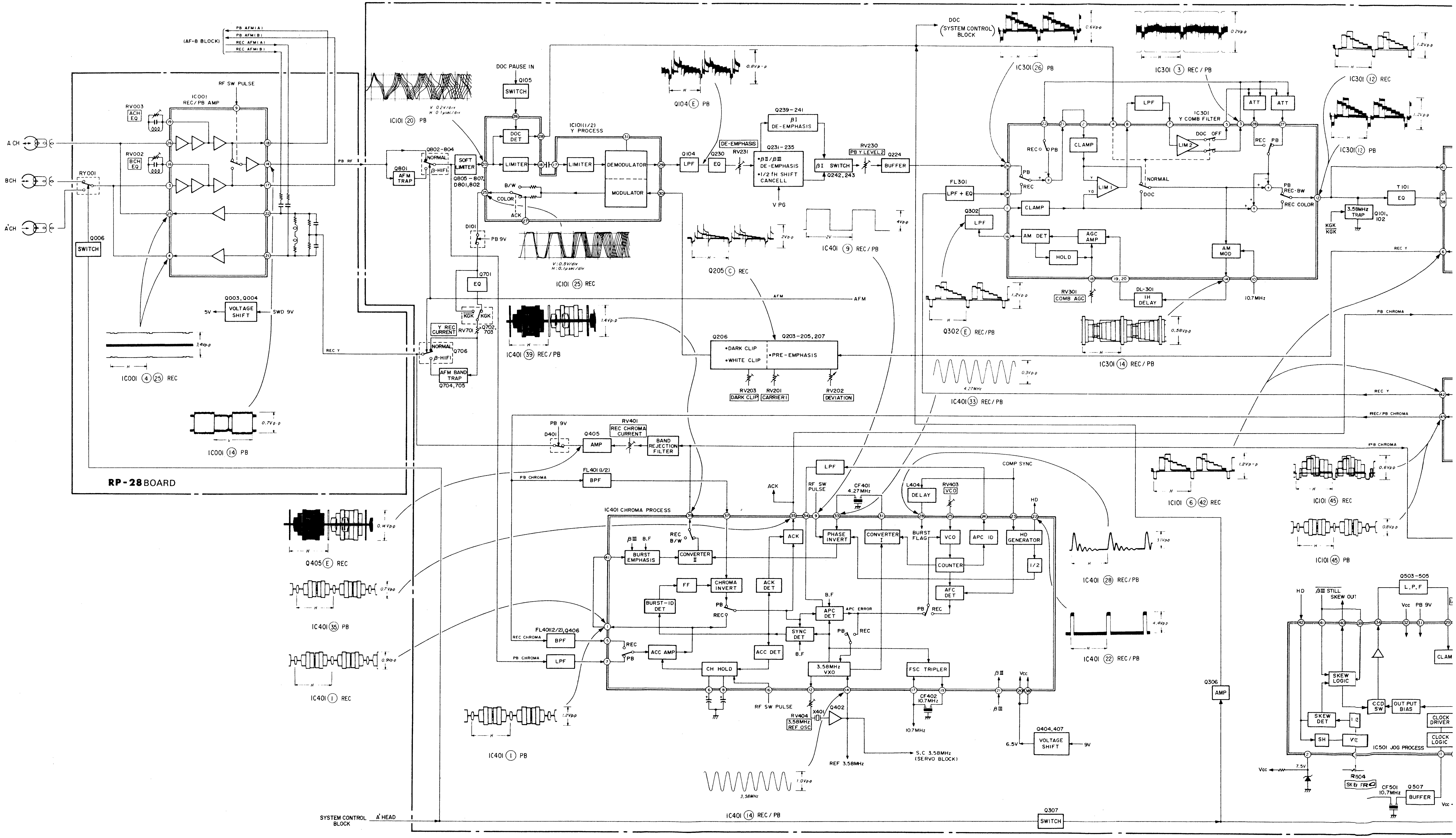

AH-5 board
CAPSTAN MOTOR board
LM-16 board
S coil sensor
T coil sensor
SS-32 board
AU-8 board
REEL MOTOR board
MI-4 board
MP-7 board

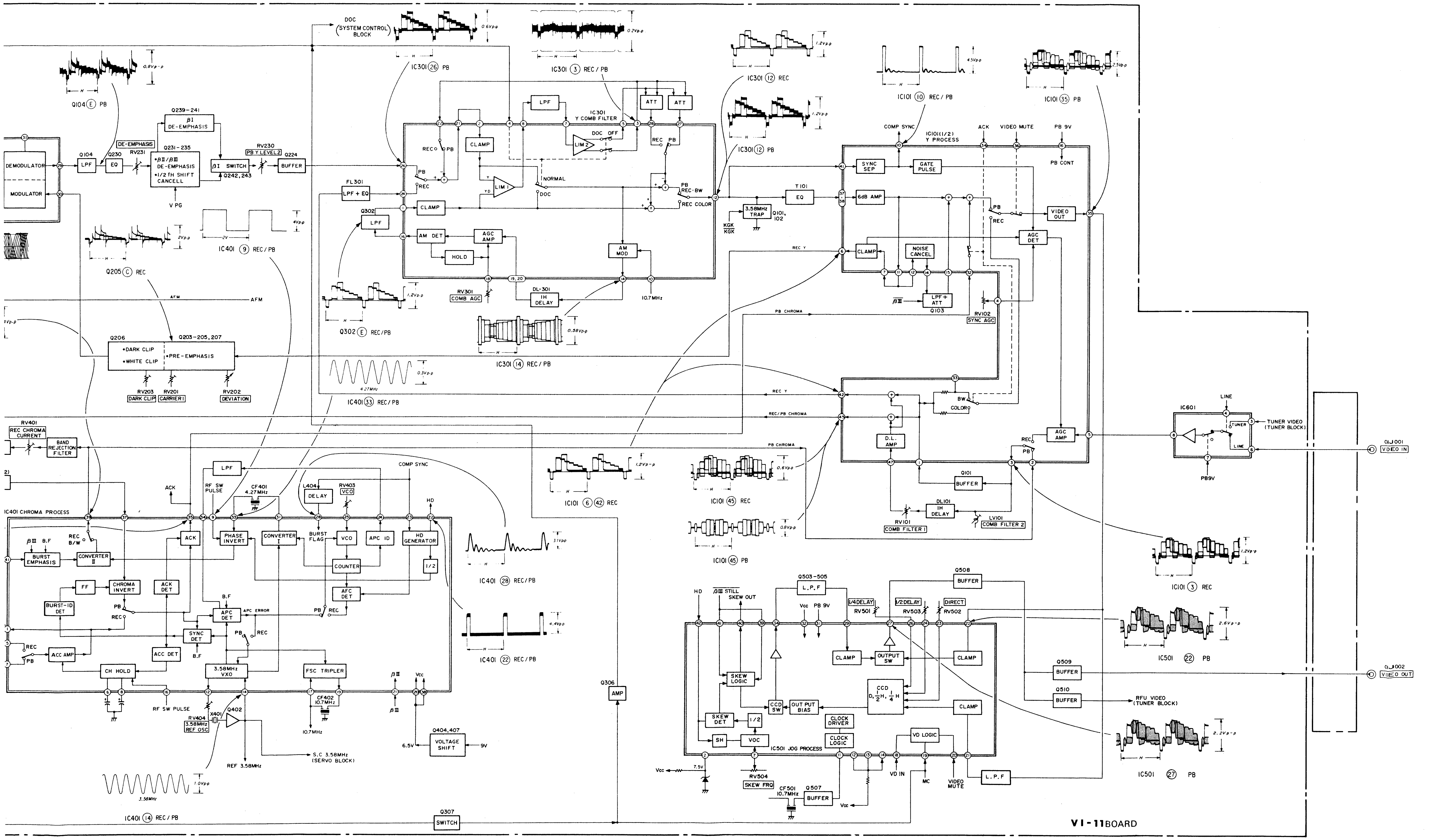
3-2. OVERALL BLOCK DIAGRAM


RF SW PULSE
COMP SYNC
S.C. 3.58MHz
AU-8 BOARD
VI-11 BOARD
RP-28 BOARD
VIDEO IN
LINE
TUNER
IC101, IC301
Y PROCESS
•AGC
•Y/C SEP
•PRE-EMPHASIS
•MOD/DEMOD
•DE-EMPHASIS
•NOISE CANCEL
•DOC
•Y/C MIX
•SYNC SEP
IC401
CHROMA PROCESS
•ACC
•ACK
•FREQENCY CONV
•APC, AFC
•CROSS TALK CANCEL
IC501
JOG PROCESS
•VD INSERT
•SKEW JUMP
VIDEO OUT
IC001
REC/PB AMP
VIDEO HEAD
ACH, BCH, A' CH
AFM REC (A), (B)
MOD
AFM PB (A), (B)
DEM
IC900
AUDIO
REC/PB AMP
AUDIO IN
L, R
AUDIO OUT
L, R
LINE
TUNER
AUDIO HEAD
BIAS/ERASE
OSC
FULL ERASE
HEAD
LEVEL METER
IC601
LEVEL METER
DRIVE
RFU1
RF MODULATOR
TU-76 BOARD
IC901
TUNER
MEMORY
TUNER
PRESET BUTTON
VHF/UHF OUT
VHF/UHF IN
VTR
TV
DISTRIBUTOR
ANTENNA SWITCH
ANTENNA TERMINAL
TU1
UHF/VHF
TUNER
IC201, 202
VIF/SIF
SUPER INTER
VIDEO
AUDIO
AFT UP, AFT DN
VC PWM
MP-7 BOARD
IC830
EXPANDER
IC870
SW
IC801
DECORDER
IC830
LPF
CTL HEAD
IC801
CTL AMP
IC 501
DRUM SERVO
COMP SYNC
S.C. 3.58MHz
CAPSTAN SERVO
LPF
DRIVE
LPF
DRIVE
CAPSTAN
SPEED
SELECTOR
IC3
FG AMP
IC1
SYSTEM CONTROL
SERVO SYSTEM CONTROL
VIDEO SYSTEM CONTROL
AUDIO SYSTEM CONTROL
PINCH
SOLENOID
DRIVE
BRAKE
SOLENOID
DRIVE
REEL MOTOR
CONTROL
IC5
TE
MOTOR
DRIVE
L901
TAPE END SENSOR
L902
TAPE TOP SENSOR
(UNTHREADING END SENSOR)
IC4
TAPE END
SENSOR
MI-4 BOARD
TAKE-UP REEL
ROTATION
SENSOR
S904
CASSETTE ON
S901-2
CASSETTE DOWN
S903
LOAD END
S901-1
REC PROOF
S DATA TS, S DATA ST


RF SW PULSE
COMP SYNC
S.C. 3.58MHz
RP-28 BOARD
IC001
REC/PB AMP
VIDEO HEAD ACH, BCH, A' CH
MP-7 BOARD
IC830
EXPANDER
IC870
IC801
IC830
SW
DECORDER
LPF
AUDIO HEAD
BIAS/ERASE OSC
FULL ERASE HEAD
TU-76 BOARD
IC901
TUNER MEMORY
TUNER PRESET BUTTON
IC 501
DRUM SERVO
CAPSTAN SERVO
COMP SYNC
S.C. 3.58MHz
CTL HEAD
IC801
CTL AMP
LPF
DRIVE
LPF
DRIVE
CAPSTAN SPEED SELECTOR
IC3
FG AMP
M901
DRUM
DRUM MOTOR
PG COIL A,B,S
M
M902
CAPSTAN MOTOR
M
FG
IC1
SYSTEM CONTROL
SERVO SYSTEM CONTROL
VIDEO SYSTEM CONTROL
AUDIO SYSTEM CONTROL
L901
TAPE END SENSOR
L902
TAPE TOP SENSOR
(UNTHREADING END SENSOR)
IC4
TAPE END SENSOR
MI-4 BOARD
TAKE-UP REEL ROTATION SENSOR
S904
CASSETTE ON
S901-2
CASSETTE DOWN
S903
LOAD END
S901-1
REC PROOF
PINCH SOLENOID DRIVE
BRAKE SOLENOID DRIVE
REEL MOTOR CONTROL
IC5
TE MOTOR DRIVE
PM901
PINCH SOLENOID
PM902
BRAKE SOLENOID
M903
REEL MOTOR
M904
LOADING/THREADING MOTOR
S DATA TS, S DATA ST
FU-38 BOARD
TRACKING
FUNCTION BUTTON
SHARPNESS
POWER
IC101
REMOTE CONTROL RECEIVER
IC201
DIRECT KEY CONTROL
DIRECT KEY
IC101
TIMER
•CLOCK
•TIMER
•REMOTE CONTROL
•COUNTER
•FUNCTION INDICATOR
TIMER SET BUTTON
FLUORESCENT DISPLAY
TM-81 BOARD
PS-39 BOARD
IC1
POWER SUPPLY
SWD 12V
SWD 9V
UNSWD 5V
AC IN

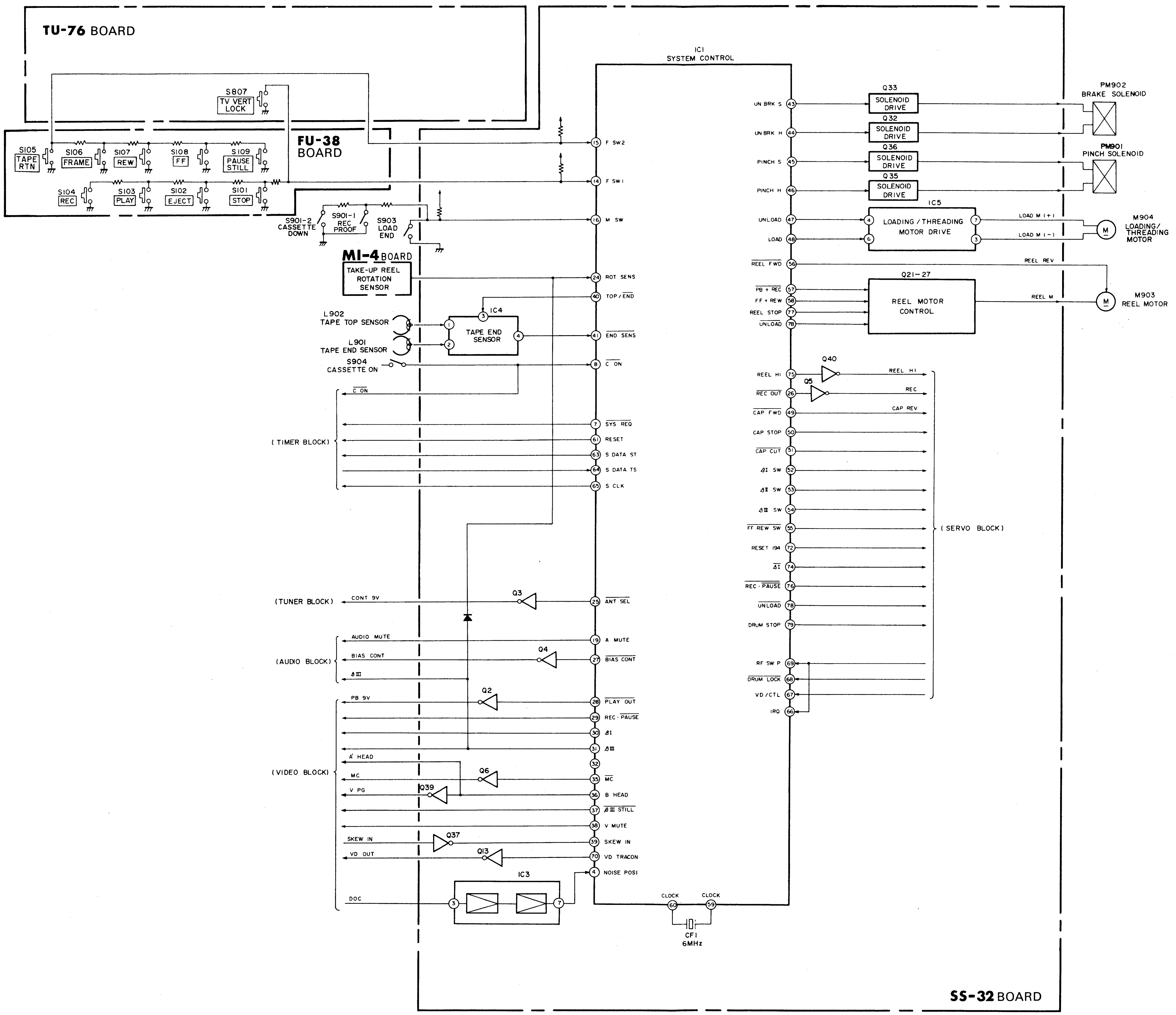
3-3. VIDEO BLOCK DIAGRAM


(AF-8 BLOCK)
PB AFM(A)
PB AFM(B)
REC AFM(A)
REC AFM(B)
RF SW PULSE
IC001 REC/PB AMP
RV003 ACH EQ
RV002 BCH EQ
A CH
BCH
A'CH
RY001
Q006 SWITCH
Q003, Q004 VOLTAGE SHIFT
5V
SWD 9V
IC001 ④㉕ REC
IC001 ⑭ PB
RP-28 BOARD
PB RF
REC Y
Q801 AFM TRAP
Q802-804 NORMAL β-HIFI
SOFT LIMITER
Q805-807, D801, 802
IC101 ⑳ PB
DOC PAUSE IN
Q105 SWITCH
DOC DET
LIMITER
IC101(1/2) Y PROCESS
DEMODULATOR
MODULATOR
B/W
COLOR
ACK
D101 PB 9V
Q701 EQ
IC101 ㉕ REC
KGK
Y REC CURRENT RV701
Q702, 703
NORMAL β-HIFI Q706
AFM BAND TRAP Q704, 705
IC401 ㊴ REC/PB
Q104 Ⓔ PB
Q104 LPF
Q230 EQ
DE-EMPHASIS RV231
Q231-235 •βII/βIII DE-EMPHASIS •1/2 fH SHIFT CANCELL
V PG
Q239-241 βI DE-EMPHASIS
βI SWITCH Q242, 243
RV230 PB Y LEVEL2
Q224 BUFFER
Q205 Ⓒ REC
IC401 ⑨ REC/PB
AFM
Q206 •DARK CLIP •WHITE CLIP
Q203-205, 207 •PRE-EMPHASIS
RV203 DARK CLIP
RV201 CARRIER
RV202 DEVIATION
DOC (SYSTEM CONTROL) BLOCK
IC301 ㉖ PB
IC301 ③ REC/PB
IC301 ⑫ REC
IC301 ⑫ PB
LPF
IC301 Y COMB FILTER
ATT
DOC OFF
LIM 2
CLAMP
LIM 1
NORMAL
DOC
REC PB
PB REC·BW
REC COLOR
FL301 LPF + EQ
Q302 LPF
CLAMP
AM DET
AGC AMP
HOLD
AM MOD
RV301 COMB AGC
DL-301 1H DELAY
10.7MHz
Q302 Ⓔ REC/PB
IC301 ⑭ REC/PB
IC401 ㉝ REC/PB
T101 EQ
3.58MHz TRAP Q101, 102
KGK
REC Y
PB CHROMA
REC/PB CHROMA
IC101 ⑥㊷ REC
IC101 ㊺ REC
IC101 ㊺ PB
PB 9V D401
Q405 AMP
RV401 REC CHROMA CURRENT
BAND REJECTION FILTER
FL401 (1/2) BPF
PB CHROMA
IC401 CHROMA PROCESS
ACK
RF SW PULSE
LPF
CF401 4.27MHz
L404 DELAY
RV403 VCO
COMP SYNC
HD
βIII B.F
BURST EMPHASIS
REC B/W
CONVERTER II
PHASE INVERT
CONVERTER I
BURST FLAG
VCO
APC ID
HD GENERATOR
COUNTER
1/2
AFC DET
FF
CHROMA INVERT
ACK DET
BURST-ID DET
APC DET
APC ERROR
SYNC DET
ACC DET
FL401(2/2), Q406
REC CHROMA
BPF
PB CHROMA
LPF
ACC AMP
CH HOLD
3.58MHz VXO
FSC TRIPLER
CF402 10.7MHz
βIII
Vcc
RF SW PULSE
RV404 3.58MHz REF OSC
X401
Q402
S.C 3.58MHz (SERVO BLOCK)
REF 3.58MHz
Q404, 407 VOLTAGE SHIFT
6.5V
9V
Q405 Ⓔ REC
IC401 ㉟ PB
IC401 ① REC
IC401 ① PB
IC401 ⑭ REC/PB
IC401 ㉘ REC/PB
IC401 ㉒ REC/PB
Q306 AMP
Q307 SWITCH
SYSTEM CONTROL BLOCK
A' HEAD
Q503-505 L.P.F
βIII STILL
SKEW OUT
Vcc PB 9V
SKEW LOGIC
CCD SW
OUT PUT BIAS
SKEW DET
SH
VC
CLOCK DRIVER
CLOCK LOGIC
IC501 JOG PROCESS
7.5V
R504 SKEW FR
CF501 10.7MHz
Q507 BUFFER
CLAM



DOC (SYSTEM CONTROL) BLOCK
0.6Vp-p
0.2Vp-p
IC301 ㉖ PB
IC301 ③ REC / PB
IC301 ⑫ REC
IC301 ⑫ PB
1.2Vp-p
IC101 ⑩ REC / PB
4.5Vp-p
IC101 ㉟ PB
2.5Vp-p
0.8Vp-p
Q104 Ⓔ PB
DEMODULATOR
MODULATOR
Q104
LPF
Q230
EQ
RV231
DE-EMPHASIS
Q239-241
βI DE-EMPHASIS
Q231-235
*βII/βIII DE-EMPHASIS
*1/2 fH SHIFT CANCELL
V PG
RV230
PB Y LEVEL2
βI SWITCH
Q242,243
Q224
BUFFER
FL301
LPF + EQ
Q302
LPF
CLAMP
AM DET
AGC AMP
HOLD
LPF
IC301 Y COMB FILTER
LIM 1
LIM 2
DOC OFF
NORMAL
DOC
ATT
ATT
REC PB
PB REC·BW
REC COLOR
AM MOD
DL-301 1H DELAY
RV301 COMB AGC
10.7MHz
1.2Vp-p
Q302 Ⓔ REC/PB
0.58Vp-p
IC301 ⑭ REC / PB
0.3Vp-p
4.27MHz
IC401 ㉝ REC / PB
2Vp-p
Q205 Ⓒ REC
4Vp-p
IC401 ⑨ REC/PB
AFM
Q206
Q203-205,207
*DARK CLIP
*WHITE CLIP
*PRE-EMPHASIS
RV203 DARK CLIP
RV201 CARRIER1
RV202 DEVIATION
T101
EQ
3.58MHz TRAP
Q101, 102
KGK
REC Y
PB CHROMA
COMP SYNC
IC101 (1/2) Y PROCESS
ACK
VIDEO MUTE
PB 9V
PB CONT
SYNC SEP
GATE PULSE
6dB AMP
VIDEO OUT
AGC DET
CLAMP
NOISE CANCEL
LPF + ATT
βIII
Q103
RV102 SYNC AGC
REC Y
REC/PB CHROMA
BW
COLOR
D.L. AMP
AGC AMP
Q101 BUFFER
DL101 1H DELAY
RV101 COMB FILTER 1
LV101 COMB FILTER 2
IC601
LINE
TUNER
TUNER VIDEO (TUNER BLOCK)
PB9V
01J001 VIDEO IN
01J002 VIDEO OUT
IC101 ⑥ ㊷ REC
IC101 ㊺ REC
IC101 ㊺ PB
IC101 ③ REC
RV401 REC CHROMA CURRENT
BAND REJECTION FILTER
IC401 CHROMA PROCESS
βIII B.F
REC B/W
BURST EMPHASIS
CONVERTER II
FF
CHROMA INVERT
BURST-ID DET
ACC AMP
CH HOLD
ACK
ACK DET
ACC DET
SYNC DET
APC DET
APC ERROR
B.F
LPF
RF SW PULSE
CF401 4.27MHz
PHASE INVERT
CONVERTER I
L404
DELAY
RV403 VCO
BURST FLAG
VCO
APC ID
COUNTER
AFC DET
HD GENERATOR
1/2
HD
3.58MHz VXO
FSC TRIPLER
CF402 10.7MHz
10.7MHz
RV404 3.58MHz REF OSC
X401
Q402
REF 3.58MHz
S.C 3.58MHz (SERVO BLOCK)
Q404,407
VOLTAGE SHIFT
6.5V
9V
3.1Vp-p
IC401 ㉘ REC/PB
4.4Vp-p
IC401 ㉒ REC/PB
1.0Vp-p
3.58MHz
IC401 ⑭ REC / PB
Q306
AMP
Q307
SWITCH
HD
βIII STILL
SKEW OUT
Q503-505
L.P.F
Vcc
PB 9V
1/4DELAY RV501
1/2DELAY RV503
DIRECT RV502
Q508 BUFFER
CLAMP
OUTPUT SW
CLAMP
SKEW LOGIC
CCD D, 1/2 H, 1/4 H
CCD SW
OUT PUT BIAS
SKEW DET
1/2
CLOCK DRIVER
CLOCK LOGIC
SH
VOC
VD LOGIC
IC501 JOG PROCESS
7.5V
RV504 SKEW FRQ
CF501 10.7MHz
Q507 BUFFER
VD IN
MC
VIDEO MUTE
L.P.F
Q509 BUFFER
Q510 BUFFER
RFU VIDEO (TUNER BLOCK)
2.6Vp-p
IC501 ㉒ PB
2.2Vp-p
IC501 ㉗ PB
VI-11BOARD

3-4. SYSTEM CONTROL BLOCK DIAGRAM


TU-76 BOARD
S807
TV VERT LOCK
FU-38 BOARD
S105
TAPE RTN
S106
FRAME
S107
REW
S108
FF
S109
PAUSE STILL
S104
REC
S103
PLAY
S102
EJECT
S101
STOP
S901-2
CASSETTE DOWN
S901-1
REC PROOF
S903
LOAD END
MI-4 BOARD
TAKE-UP REEL ROTATION SENSOR
L902
TAPE TOP SENSOR
L901
TAPE END SENSOR
IC4
TAPE END SENSOR
S904
CASSETTE ON
C ON
(TIMER BLOCK)
(TUNER BLOCK)
CONT 9V
Q3
AUDIO MUTE
BIAS CONT
βIII
(AUDIO BLOCK)
Q4
PB 9V
Q2
A' HEAD
MC
V PG
(VIDEO BLOCK)
Q6
Q39
SKEW IN
VD OUT
Q37
Q13
IC3
DOC
IC1
SYSTEM CONTROL
F SW2
F SW1
M SW
ROT SENS
TOP / END
END SENS
C ON
SYS REQ
RESET
S DATA ST
S DATA TS
S CLK
ANT SEL
A MUTE
BIAS CONT
PLAY OUT
REC · PAUSE
βI
βIII
MC
B HEAD
βIII STILL
V MUTE
SKEW IN
VD TRACON
NOISE POSI
CLOCK
CLOCK
CF1
6MHz
UN BRK S
UN BRK H
PINCH S
PINCH H
UNLOAD
LOAD
REEL FWD
PB + REC
FF + REW
REEL STOP
UNLOAD
Q33
SOLENOID DRIVE
Q32
SOLENOID DRIVE
Q36
SOLENOID DRIVE
Q35
SOLENOID DRIVE
IC5
LOADING / THREADING MOTOR DRIVE
LOAD M (+)
LOAD M (−)
REEL REV
Q21−27
REEL MOTOR CONTROL
REEL M
PM902
BRAKE SOLENOID
PM901
PINCH SOLENOID
M904
LOADING/ THREADING MOTOR
M903
REEL MOTOR
REEL HI
Q40
REEL HI
Q5
REC OUT
REC
CAP FWD
CAP REV
CAP STOP
CAP CUT
βI SW
βII SW
βIII SW
FF REW SW
RESET 194
βI
REC · PAUSE
UNLOAD
DRUM STOP
RF SW P
DRUM LOCK
VD / CTL
IRQ
(SERVO BLOCK)
SS-32 BOARD

3-5. SYSTEM CONTROL CIRCUIT AND VIDEO BLOCK INTERFACE

MODE SIGNAL	I/O	PIN No.	STOP	FF	REW	PB	PB·PAUSE	PICTURE SEARCH		REC	REC·PAUSE	TIMER·REC	FR SEARCH	
								CUE	REV				CUE	REV
$\overline{\text{PLAY OUT}}$	O	IC1-㉘	H	H	H	L	L	L	L	H	H	H	L	L
REC·$\overline{\text{P}}$	O	IC1-㉙	L	L	L	L	L	L	L	H	L	H	L	L
βI	O	IC1-㉚	L	L	L	*2	*3	*3	*3	L	L	L	L	L
βIII	O	IC1-㉛	*1	*1	*1	*2	*3	*3	*3	*1	*1	*1	*3	*3
DOC PAUSE*4	O	IC1-㉜	L	L	L	L	H	L	L	L	L	L	L	L
$\overline{\text{MC}}$	O	IC1-㉟	H	H	H	H	L	L	L	H	H	H	L	L
$\overline{\text{B HEAD}}$*4 (A' HEAD)	O	IC1-㊱	L	L	L	L	H	L	L	L	L	L	L	L
$\overline{\text{βIII STILL}}$*4	O	IC1-㊲	H	H	H	H	L*4	H	H	H	H	H	H	H
V MUTE	O	IC1-㊳	L	L	L	L	L	L	L	L	L	L	L	L
VD/TRCN	O	IC1-(70)	L	L	L	L	V D	V D	V D	L	L	L	V D	V D

*1 by βII/βIII selector
*2 by recorded tape
*3 holds the previous level
*4 during βIII PAUSE only

3-6. SYSTEM CONTROL CIRCUIT AND AUDIO CIRCUIT INTERFACE

MODE SIGNAL	I/O	PIN No.	STOP	FF	REW	PB	PB·PAUSE	PICTURE SEARCH		REC	REC·PAUSE	TIMER·REC	FR SEARCH	
								CUE	REV				CUE	REV
A-MUTE	O	IC1-⑲	L	L	L	L	H	H	H	L	L	L	H	H
$\overline{\text{BIAS CONT}}$	O	IC1-㉗	H	H	H	H	H	H	H	L	H	L	H	H
βIII	O	IC1-㉛	*1	*1	*1	*2	*3	*3	*3	*1	*1	*1	*3	*3

*1 by βII/βIII selector
*2 by recorded tape
*3 holds the previous level

3-7. SYSTEM CONTROL CIRCUIT AND REEL MOTOR CONTROL CIRCUIT INTERFACE

SIGNAL \ MODE	I/O	PIN No.	EJECTED	LOADING	THREADING	STOP	UN-THREADING	UN-LOADING	FF	REW	PB	PB·PAUSE	PICTURE SEARCH		REC	REC·PAUSE	TIMER·REC	FR SEARCH	
													CUE	REV				CUE	REV
$\overline{\text{REEL FWD}}$	O	IC1-(56)	L	L	L	L	H	L	L	H	L	L	L	H	L	L	L	L	H
$\overline{\text{PB + REC}}$	O	IC1-(57)	L	L	L	L	H	L	H	H	L	L	L	L	L	L	L	L	L
FF + REW	O	IC1-(58)	L	L	L	L	H	L	H	H	L	L	H	H	L	L	L	H	H
REEL STOP	O	IC1-(77)	H	H	L	H	L	H	L	L	L	H	L	L	L	H	L	L	L
$\overline{\text{UNLOAD}}$	O	IC1-(78)	H	H	H	H	L	L	H	H	H	H	H	H	H	H	H	H	H

3-8. SYSTEM CONTROL CIRCUIT AND MECHANISM BLOCK INTERFACE

SIGNAL \ MODE	I/O	PIN No.	EJECTED	LOADING	THREADING	STOP	UN-THREADING	UN-LOADING	FF	REW	PB	PB·PAUSE	PICTURE SEARCH		REC	REC·PAUSE	TIMER·REC	FR SEARCH	
													CUE	REV				CUE	REV
$\overline{\text{C}}$ ON	I	IC1-⑧	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
M SW*1	I	IC1-⑯	5V	5V	2V (3.5V)	0V	2V (3.5V)	5V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V	0V
ROT-SENS*2	I	IC1-㉔																	
TOP/$\overline{\text{END}}$	O	IC1-㊵	L	L	L	L	H	H	L	H	L	L	L	H	L	L	L	L	H
$\overline{\text{END SENS}}$	I	IC1-㊶	H/L	H/L	H/L	H	H	L	H	H	H	H	H	H	H	H	H	H	H
UNBRK S	O	IC1-㊸	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
UNBRK H	O	IC1-㊹	L	L	L	L	L	L	H	H	H	L	H	H	H	L	H	H	H
PINCH S	O	IC1-㊺	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
PINCH H	O	IC1-㊻	H	H	L	L	L	H	L	L	H	L	L	L	H	L	H	L	L
LOAD	O	IC1-㊼	L	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L
UNLOAD	O	IC1-㊽	L	L	L	L	H	H	L	L	L	L	L	L	L	L	L	L	L

*1. ( ): the sefety tab of the cassette is broken

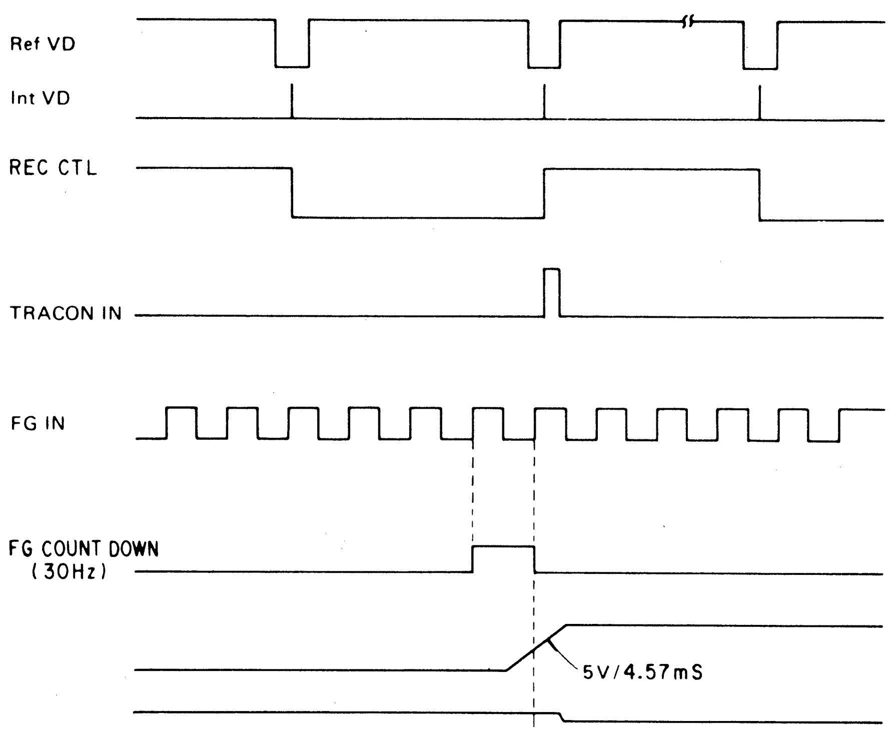
*2. FG signal of a frequency proportional to the take-up reel revolution

3-9. SYSTEM CONTROL CIRCUIT AND SERVO CIRCUIT INTERFACE

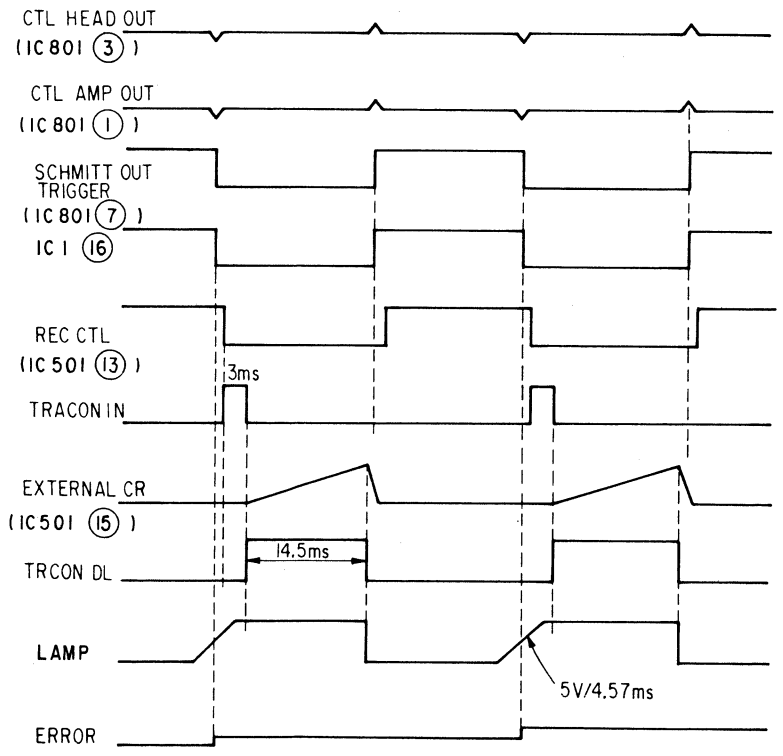
SIGNAL \ MODE	I/O	PIN No.	STOP	FF	REW	PB	PB·PAUSE	PICTURE SEARCH		REC	REC·PAUSE	TIMER·REC	FR SEARCH	
								CUE	REV				CUE	REV
$\overline{\text{REC OUT}}$	O	IC1-㉖	H	H	H	H	H	H	H	L	L	L	H	H
$\overline{\text{BIAS CONT}}$	O	IC1-㉗	H	H	H	H	H	H	H	L	H	L	H	H
βI	O	IC1-㉚	L	L	L	*2	*3	*3	*3	L	L	L	L	L
CAP FWD	O	IC1-㊾	H	H	H	H	H	H	H	H	H	H	H	H
CAP STOP	O	IC1-㊿	H	H	H	L	L	L	L	L	L	L	L	L
$\overline{\text{CAP CUT}}$	O	IC1-(51)	H	H	H	H	H	H	H	H	H	H	H	H
βI SW	O	IC1-(52)	L	L	L	*2	*3	*3	*3	L	L	L	L	L
βII SW	O	IC1-(53)	*1	*1	*1	*2	*3	*3	*3	*1	*1	*1	*3	*3
βIII SW	O	IC1-(54)	*1	*1	*1	*2	*3	*3	*3	*1	*1	*1	*3	*3
$\overline{\text{FF REW SW}}$	O	IC1-(55)	H	L	L	H	H	L	L	H	H	H	L	L
VD/CTL	I	IC1-(67)		CTL	CTL	CTL		CTL	CTL	VD		VD	CTL	CTL
$\overline{\text{DRUM LOCK}}$	I	IC1-(68)	H			L	L			L	L	L		
RF SW P	I	IC1-(69)		*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
RESET 194*5	O	IC1-(72)	L	L	L	L	L	L	L	L	L	L	L	L
$\overline{\beta\text{I}}$	O	IC1-(74)	H	H	H	*2	*3	*3	*3	H	H	H	H	H
$\overline{\text{REEL HI}}$	O	IC1-(75)	H	L	L	H	H	L	L	H	H	H	L	L
$\overline{\text{REC·P}}$	O	IC1-(76)	H	H	H	H	H	H	H	L	H	L	H	H
$\overline{\text{DRAM STOP}}$	O	IC1-(79)	H	L	L	L	L	L	L	L	L	L	L	L

*1 by ßII/ßIII selector
*2 by recorded tape
*3 holds the previous level
*4 30 Hz 50% duty ratio pulse
*5 outputs a pulse ("H" level) when power is on

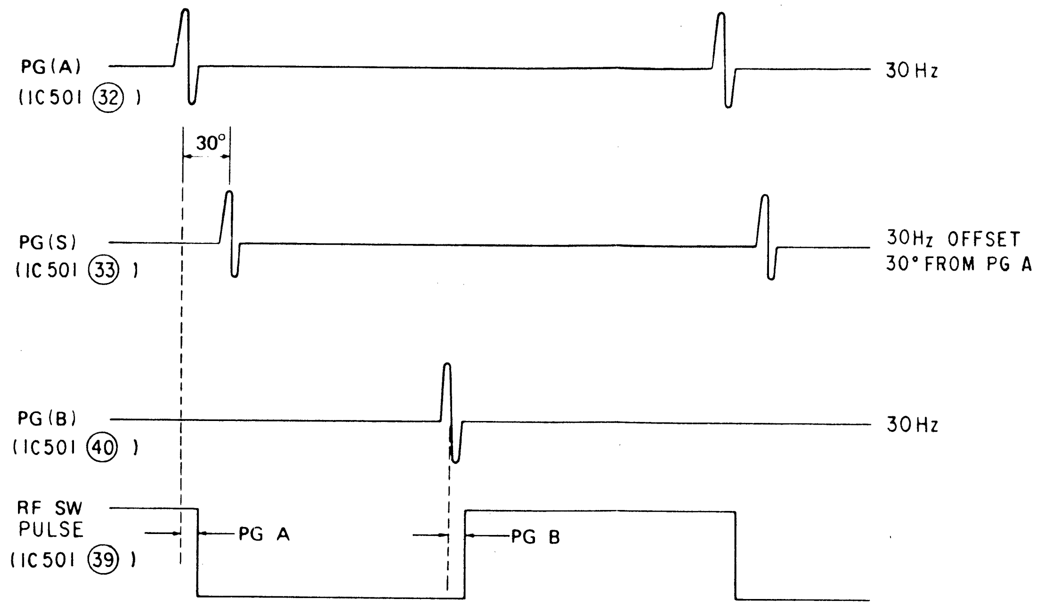
3-10. CAPSTAN PHASE SYSTEM TIMING CHART (REC)


Ref VD
Int VD
REC CTL
TRACON IN
FG IN
FG COUNT DOWN (30Hz)
5V/4.57mS

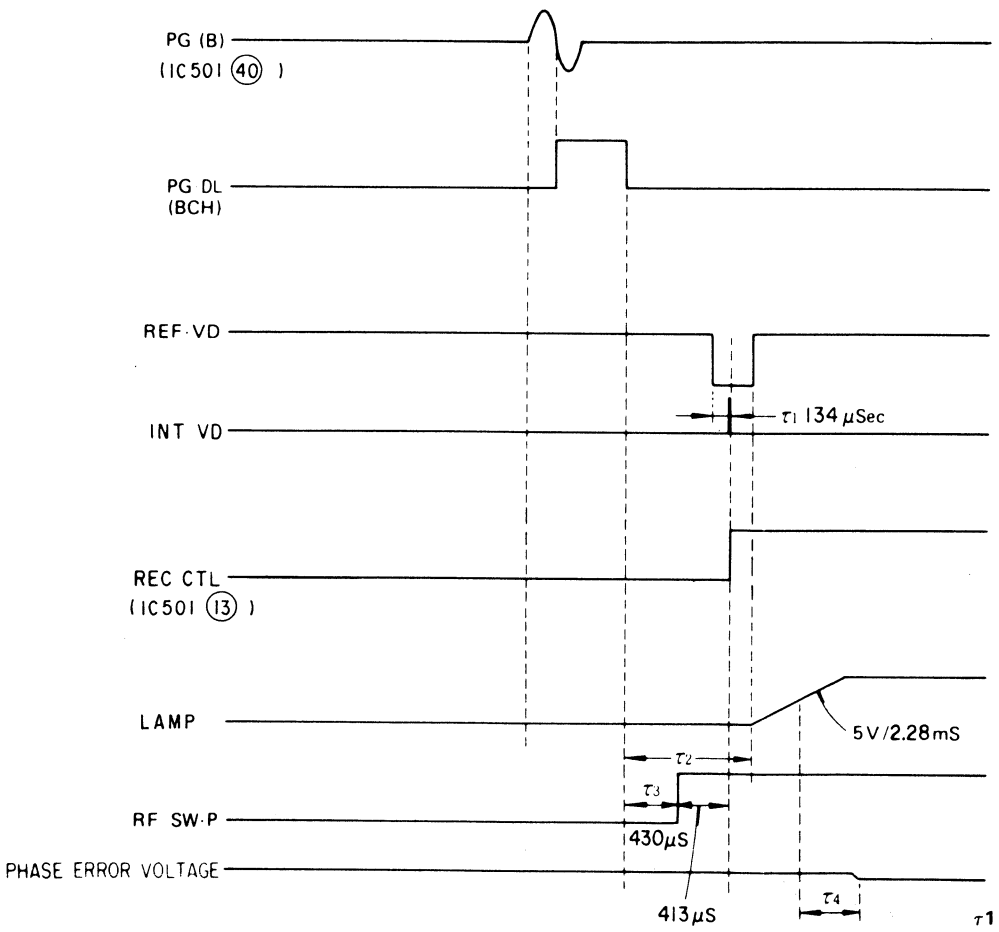
3-11. CAPSTAN PHASE SYSTEM TIMING CHART (PB)


CTL HEAD OUT (IC801 ③)
CTL AMP OUT (IC801 ①)
SCHMITT TRIGGER OUT (IC801 ⑦)
IC1 ⑯
REC CTL (IC501 ⑬)
3ms
TRACON IN
EXTERNAL CR (IC501 ⑮)
14.5ms
TRCON DL
LAMP
5V/4.57ms
ERROR

3-12. PG SIGNAL TIMING CHART


PG(A) (IC501 ㉜)
30Hz
30°
PG(S) (IC501 ㉝)
30Hz OFFSET 30° FROM PG A
PG(B) (IC501 ㊵)
30Hz
RF SW PULSE (IC501 ㊴)
PG A
PG B

3-13. DRUM PHASE SYSTEM TIMING CHART

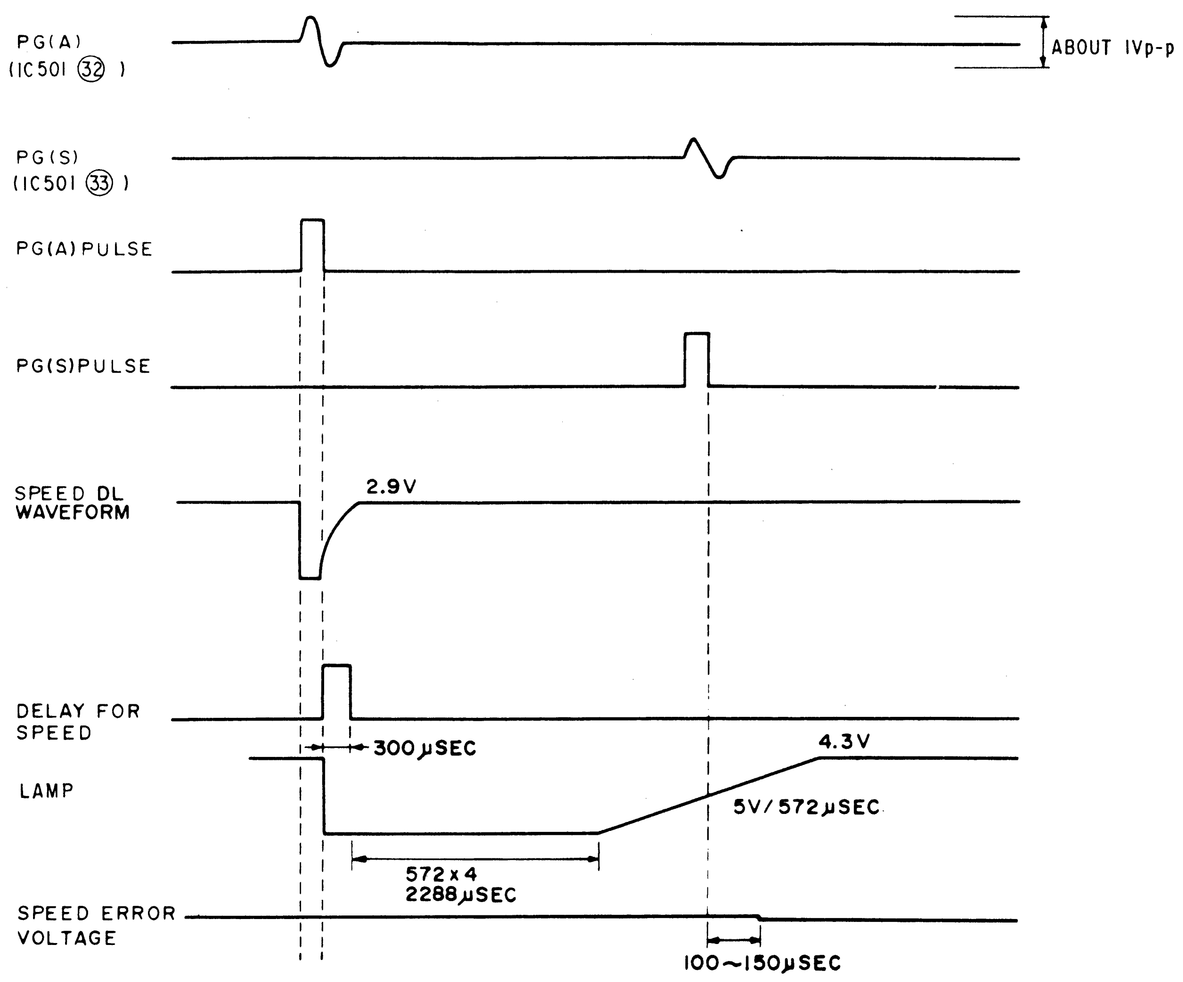

PG (B) (IC501 ㊵)
PG DL (BCH)
REF·VD
τ1 134 μSec
INT VD
REC CTL (IC501 ⑬)
LAMP
5V/2.28mS
τ2
τ3
RF SW·P
430μS
413μS
PHASE ERROR VOLTAGE
τ4

τ1 **REF VD detection delay time**
τ2, 3 **digital delay time**
τ4 **data exchang time**

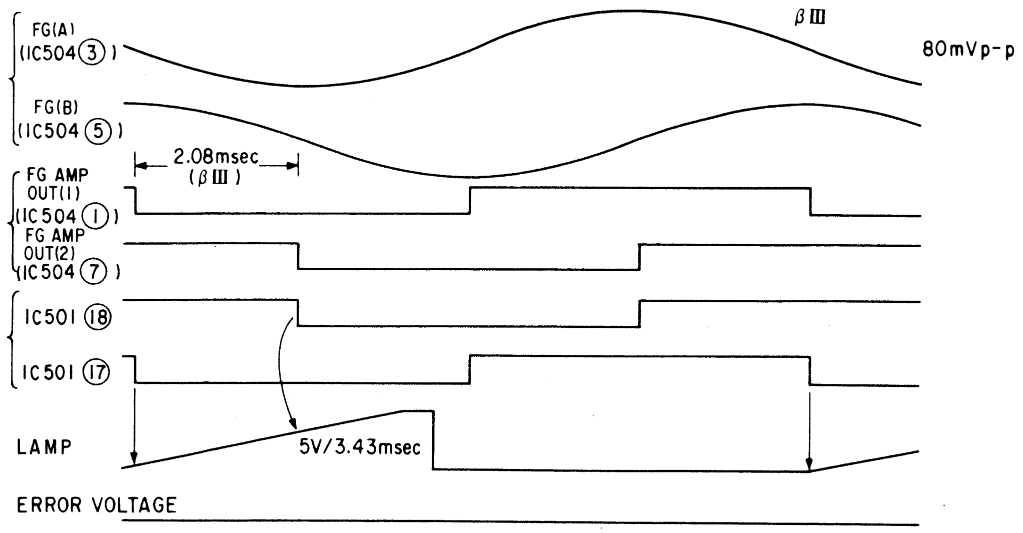
3-14.

3-15.

3-14. DRUM SPEED SYSTEM TIMING CHART

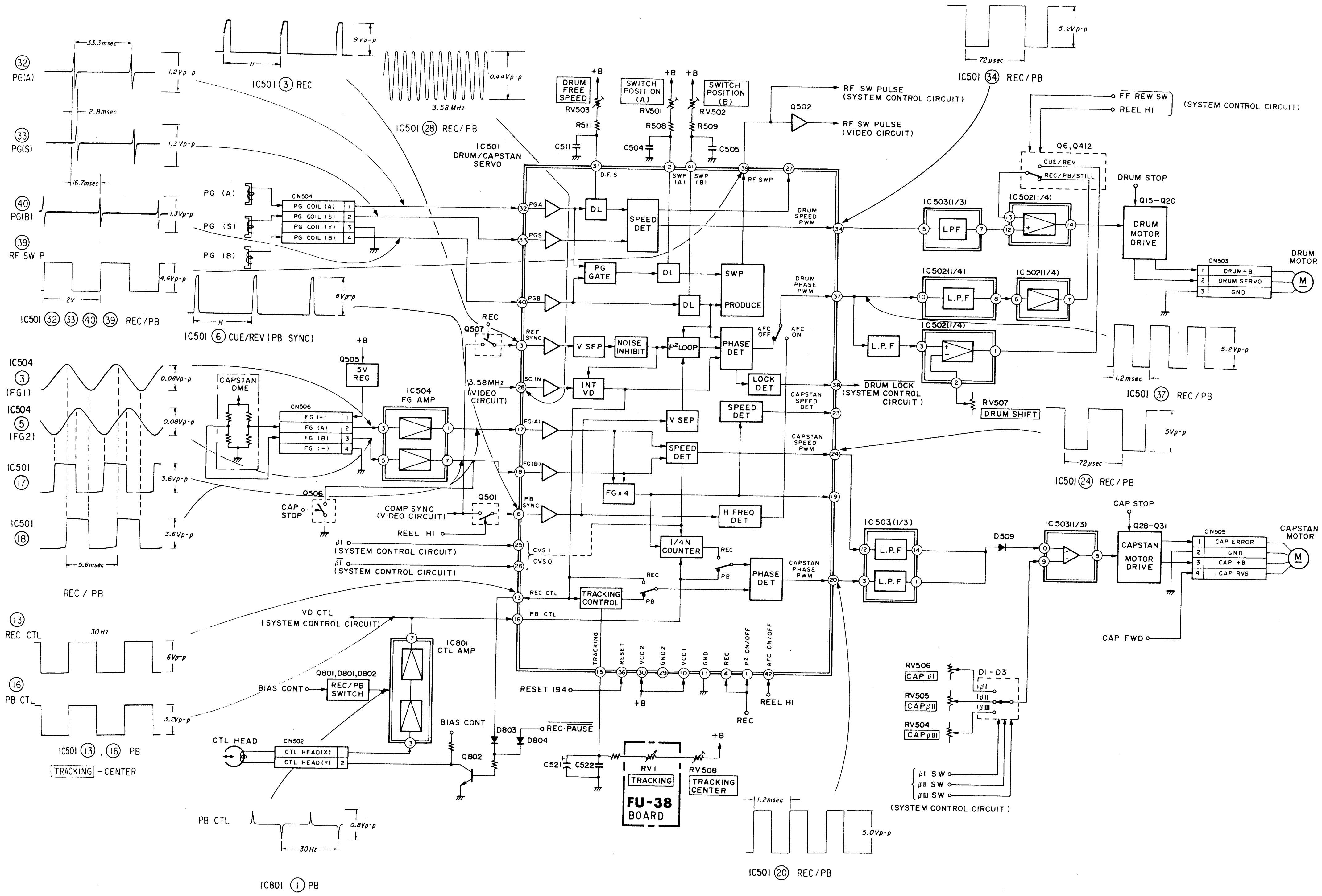

PG(A)
(IC501 ㉜)
ABOUT 1Vp-p
PG(S)
(IC501 ㉝)
PG(A) PULSE
PG(S) PULSE
SPEED DL
WAVEFORM
2.9V
DELAY FOR
SPEED
300μSEC
4.3V
LAMP
5V/572μSEC
572 x 4
2288μSEC
SPEED ERROR
VOLTAGE
100~150μSEC

3-15. CAPSTAN SPEED SYSTEM TIMING CHART

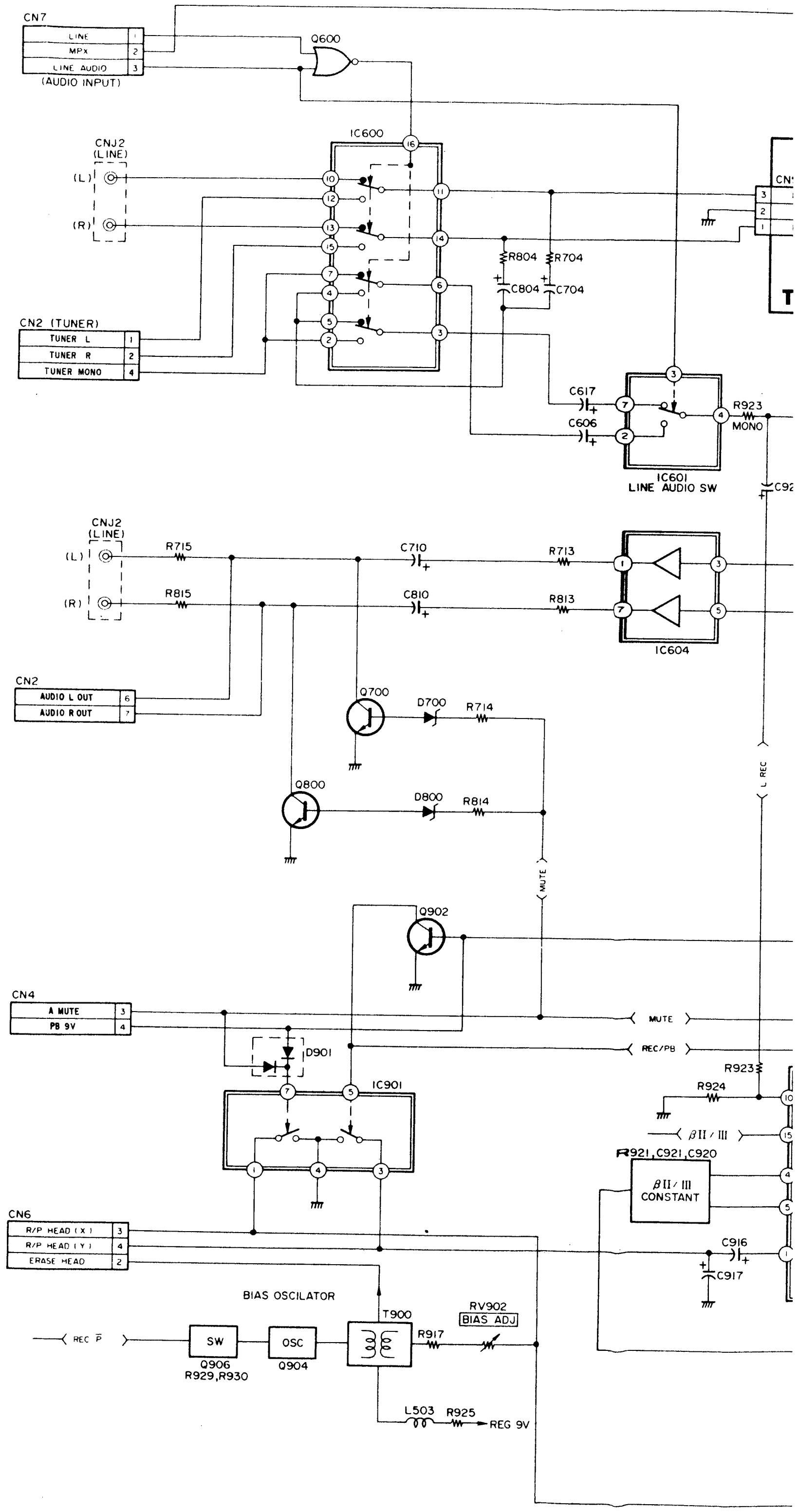

FG(A)
(IC504 ③)
βIII
80mVp-p
FG(B)
(IC504 ⑤)
2.08msec
(βIII)
FG AMP
OUT(1)
(IC504 ①)
FG AMP
OUT(2)
(IC504 ⑦)
IC501 ⑱
IC501 ⑰
LAMP
5V/3.43msec
ERROR VOLTAGE

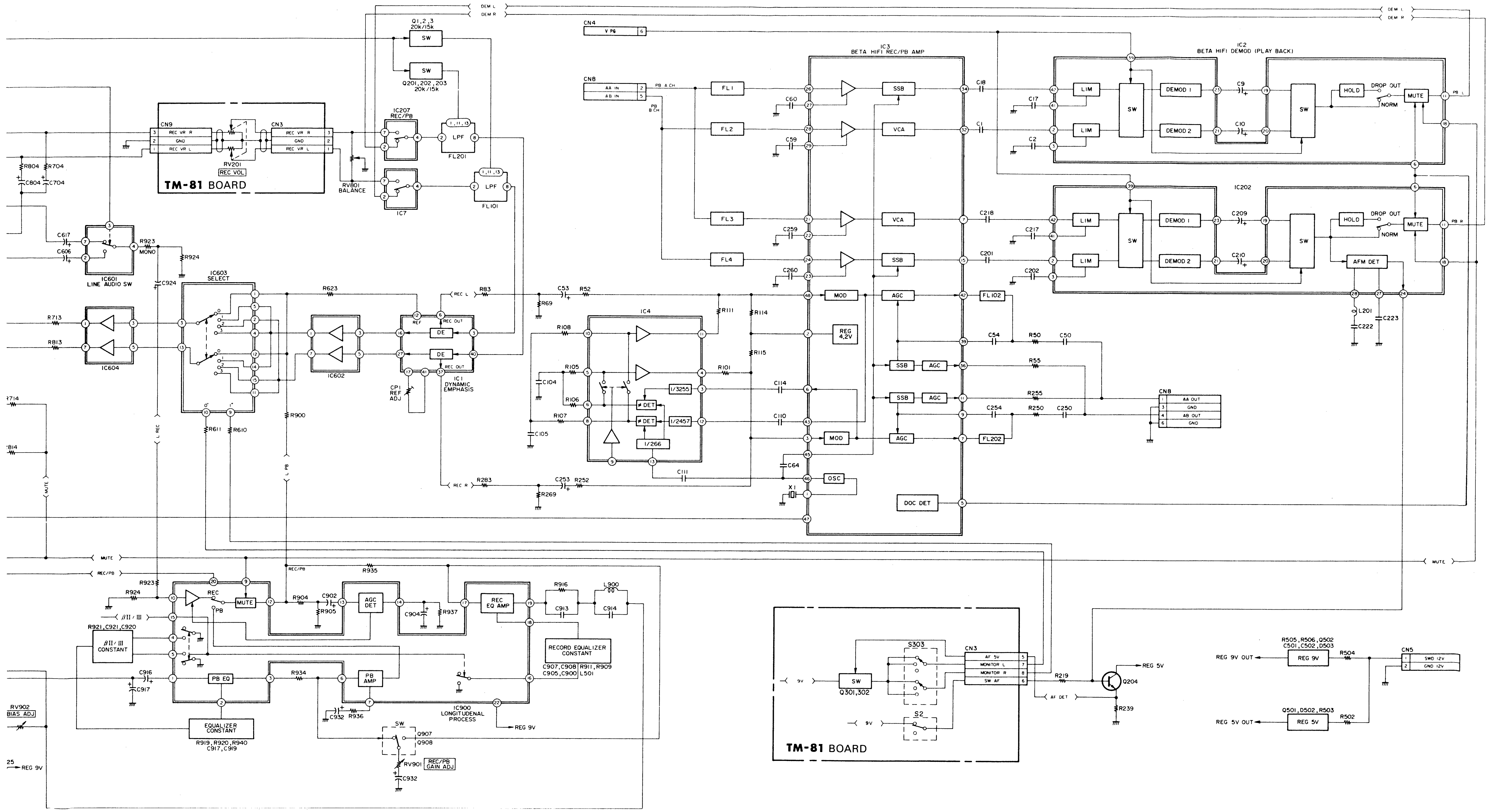
ı delay time

3-16. SERVO BLOCK DIAGRAM


IC501 ③ REC
IC501 ㉘ REC/PB
3.58MHz
IC501 ㉞ REC/PB
32 PG(A)
33 PG(S)
40 PG(B)
39 RF SW P
IC501 ㉜ ㉝ ㊵ ㊴ REC/PB
IC501 ⑥ CUE/REV (PB SYNC)
PG (A)
PG (S)
PG (B)
CN504
PG COIL (A)
PG COIL (S)
PG COIL (Y)
PG COIL (B)
DRUM FREE SPEED
RV503
R511
C511
SWITCH POSITION (A)
RV501
R508
C504
SWITCH POSITION (B)
RV502
R509
C505
IC501 DRUM/CAPSTAN SERVO
Q502
RF SW PULSE (SYSTEM CONTROL CIRCUIT)
RF SW PULSE (VIDEO CIRCUIT)
FF REW SW
REEL HI
(SYSTEM CONTROL CIRCUIT)
Q6, Q412
CUE/REV
REC/PB/STILL
DRUM STOP
Q15-Q20
DRUM MOTOR DRIVE
CN503
DRUM+B
DRUM SERVO
GND
DRUM MOTOR
IC503(1/3)
LPF
IC502(1/4)
L.P.F
DL
SPEED DET
PG GATE
SWP
PRODUCE
DRUM SPEED PWM
DRUM PHASE PWM
REC
Q507
V SEP
NOISE INHIBIT
P² LOOP
PHASE DET
AFC OFF
AFC ON
LOCK DET
DRUM LOCK (SYSTEM CONTROL CIRCUIT)
RV507
DRUM SHIFT
IC501 ㊲ REC/PB
IC504 ③ (FG1)
IC504 ⑤ (FG2)
IC501 ⑰
IC501 ⑱
REC / PB
+B
Q505
5V REG
CAPSTAN DME
CN506
FG (+)
FG (A)
FG (B)
FG (-)
IC504 FG AMP
3.58MHz (VIDEO CIRCUIT)
INT VD
SPEED DET
CAPSTAN SPEED DET
CAPSTAN SPEED PWM
FG x 4
H FREQ DET
Q506
CAP STOP
Q501
COMP SYNC (VIDEO CIRCUIT)
REEL HI
βI (SYSTEM CONTROL CIRCUIT)
βII (SYSTEM CONTROL CIRCUIT)
CVS I
CVS O
1/4N COUNTER
PHASE DET
CAPSTAN PHASE PWM
REC CTL
PB CTL
TRACKING CONTROL
IC501 ㉔ REC/PB
CAP STOP
IC503(1/3)
D509
Q28-Q31
CAPSTAN MOTOR DRIVE
CN505
CAP ERROR
GND
CAP +B
CAP RVS
CAPSTAN MOTOR
CAP FWD
⑬ REC CTL
30Hz
⑯ PB CTL
IC501 ⑬, ⑯ PB
TRACKING - CENTER
VD CTL (SYSTEM CONTROL CIRCUIT)
BIAS CONT
Q801, D801, D802
REC/PB SWITCH
IC801 CTL AMP
BIAS CONT
CTL HEAD
CN502
CTL HEAD (X)
CTL HEAD (Y)
Q802
D803
D804
REC·PAUSE
RESET 194
C521
C522
RV1 TRACKING
RV508 TRACKING CENTER
FU-38 BOARD
REEL HI
REC
RV506 CAP βI
RV505 CAP βII
RV504 CAP βIII
D1-D3
βI SW
βII SW
βIII SW
(SYSTEM CONTROL CIRCUIT)
PB CTL
IC801 ① PB
IC501 ⑳ REC/PB
TRACKING
RESET
VCC 2
GND2
VCC 1
GND
P² ON/OFF
AFC ON/OFF

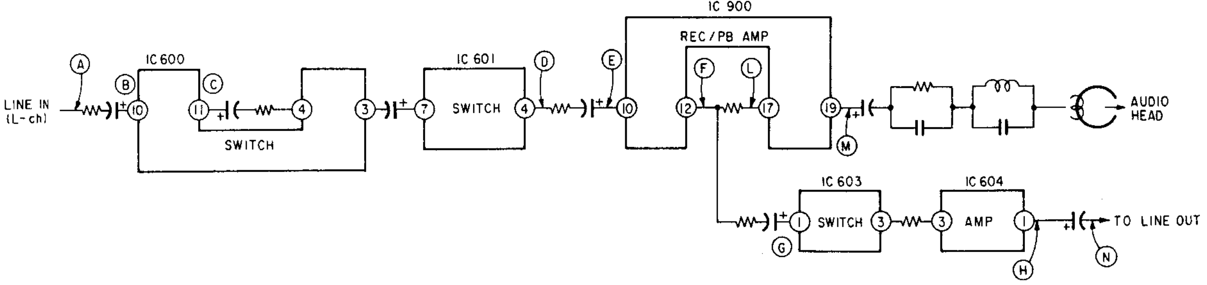
3-17. AUDIO BLOCK DIAGRAM


CN7
LINE
MPX
LINE AUDIO
(AUDIO INPUT)
Q600
IC600
CNJ2 (LINE)
(L)
(R)
R804
R704
C804
C704
CN2 (TUNER)
TUNER L
TUNER R
TUNER MONO
C617
C606
IC601 LINE AUDIO SW
R923
MONO
CNJ2 (LINE)
R715
R815
C710
C810
R713
R813
IC604
CN2
AUDIO L OUT
AUDIO R OUT
Q700
D700
R714
Q800
D800
R814
MUTE
Q902
CN4
A MUTE
PB 9V
MUTE
REC/PB
D901
IC901
R923
R924
βII/III
R921, C921, C920
βII/III CONSTANT
CN6
R/P HEAD (X)
R/P HEAD (Y)
ERASE HEAD
C916
C917
BIAS OSCILATOR
REC
SW
Q906
R929, R930
OSC
Q904
T900
R917
RV902
BIAS ADJ
L503
R925
REG 9V

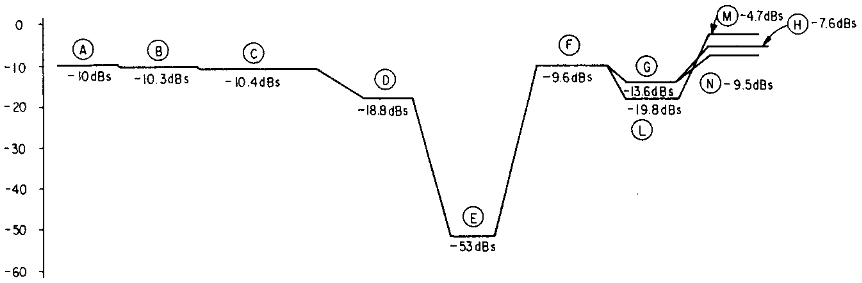

DEM L
DEM R
Q1,2,3 20k/15k
SW
Q201,202,203 20k/15k
CN4
V PG
CN8
AA IN
AB IN
PB A CH
PB B CH
IC3 BETA HIFI REC/PB AMP
IC2 BETA HIFI DEMOD (PLAY BACK)
IC202
FL1
FL2
FL3
FL4
SSB
VCA
LIM
DEMOD 1
DEMOD 2
HOLD
DROP OUT
NORM
MUTE
PB L
PB R
AFM DET
L201
C222
C223
CN9
REC VR R
GND
REC VR L
CN3
RV201
REC VOL
TM-81 BOARD
RV801 BALANCE
IC207 REC/PB
IC7
LPF
FL201
FL101
R804
R704
C804
C704
C617
C606
R923 MONO
R924
IC601 LINE AUDIO SW
IC603 SELECT
C924
R713
R813
IC604
IC602
R623
REC L
R83
DE
REF
REC OUT
IC1 DYNAMIC EMPHASIS
CP1 REF ADJ
R900
R611
R610
L REC
L PB
MUTE
C53
R52
R69
IC4
R108
R105
R106
R107
C104
C105
R111
R114
R115
R101
1/3255
1/2457
1/266
DET
C114
C110
C111
MOD
REG 4.2V
AGC
FL102
FL202
C54
R50
C50
R55
R255
R250
C254
C250
CN8
AA OUT
GND
AB OUT
GND
C64
OSC
X1
DOC DET
REC R
R283
C253
R252
R269
C60
C59
C259
C260
C18
C1
C218
C201
C17
C2
C217
C202
C9
C10
C209
C210
REC/PB
R935
R923
R924
βII / III
R921,C921,C920
βII/III CONSTANT
REC
PB
R904
C902
R905
AGC DET
C904
R937
REC EQ AMP
R916
L900
C913
C914
RECORD EQUALIZER CONSTANT
C907,C908 R911,R909
C905,C900 L501
C916
C917
PB EQ
R934
PB AMP
IC900 LONGITUDENAL PROCESS
REG 9V
C932
R936
SW
Q907
Q908
RV901
REC/PB GAIN ADJ
C932
EQUALIZER CONSTANT
R919,R920,R940
C917,C919
RV902
BIAS ADJ
REG 9V
R714
R814
9V
Q301,302
S303
CN3
AF 5V
MONITOR L
MONITOR R
SW AF
S2
TM-81 BOARD
R219
Q204
REG 5V
AF DET
R239
R505,R506,Q502
C501,C502,D503
REG 9V OUT
REG 9V
R504
CN5
SWD 12V
GND 12V
Q501,D502,R503
REG 5V OUT
REG 5V
R502

3-18. AUDIO LEVEL DIAGRAM REC (NORMAL)

REC MODE
0dBs = 0.775Vrms
f = 333Hz
BIAS OSC : STOPPED

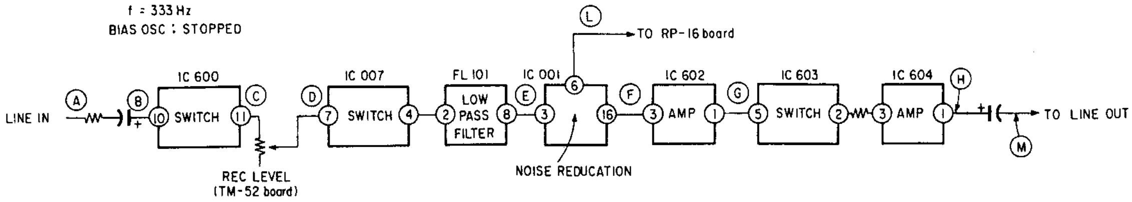


LINE IN (L-ch)
A
B
C
IC 600
10
11
4
3
SWITCH
IC 601
7
SWITCH
4
D
E
IC 900
REC / PB AMP
10
12
F
L
17
19
M
AUDIO HEAD
IC 603
1
SWITCH
3
G
IC 604
3
AMP
1
H
N
TO LINE OUT

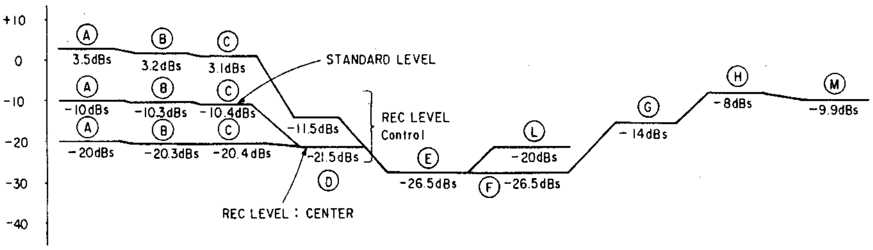


3-19. AUDIO LEVEL DIAGRAM REC (BETA Hi-Fi)

REC MODE
0dBs = 0.775Vrms
f = 333Hz
BIAS OSC : STOPPED

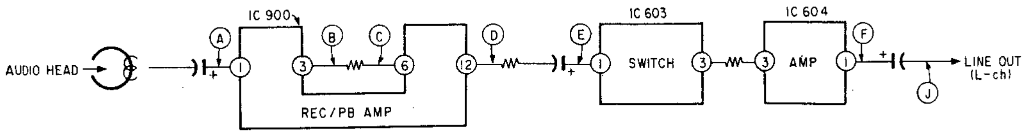


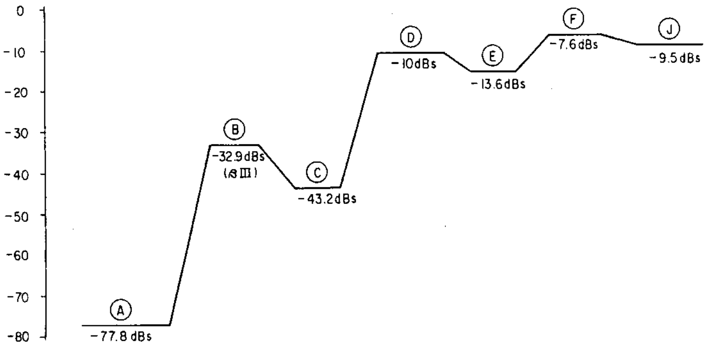
LINE IN
A
B
IC 600
10
SWITCH
11
C
REC LEVEL (TM-52 board)
D
IC 007
7
SWITCH
4
FL 101
2
LOW PASS FILTER
8
E
IC 001
3
6
16
L
TO RP-16 board
NOISE REDUCATION
F
IC 602
3
AMP
1
G
IC 603
5
SWITCH
2
IC 604
3
AMP
1
H
M
TO LINE OUT



3-20. AUDIO LEVEL DIAGRAM PB (NORMAL)

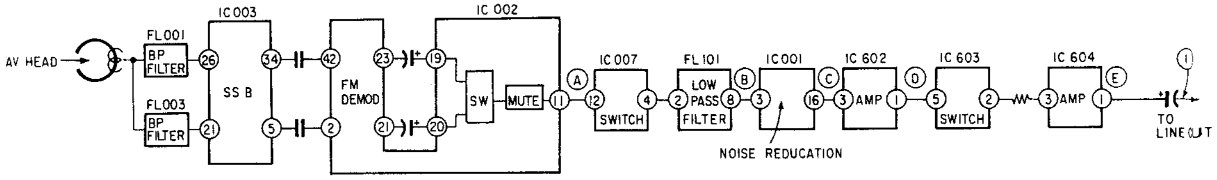
PB MODE
0dBs = 0.775 V rms
f = 333 Hz
BIAS OSC : STOPPED

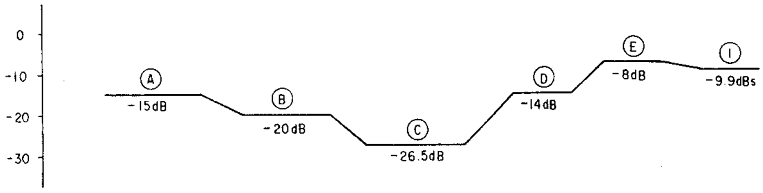

AUDIO HEAD
IC 900
A
B
C
D
E
F
J
1
3
6
12
REC/PB AMP
IC 603
SWITCH
IC 604
AMP
LINE OUT
(L-ch)



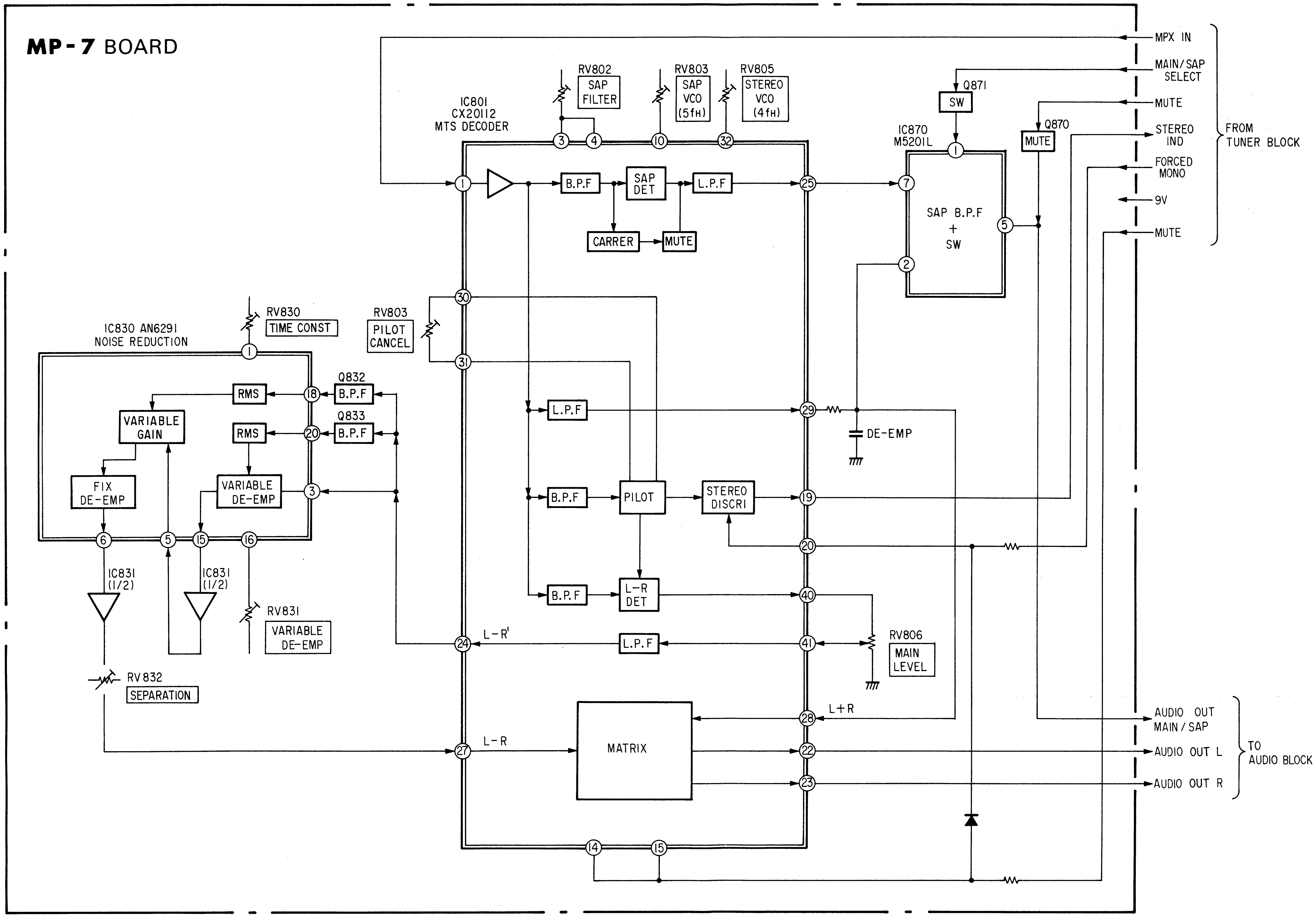
3-21. AUDIO LEVEL DIAGRAM PB (BETA Hi-Fi)

PB MODE
0dBs = 0.775 V rms
f = 333 Hz
BIAS OSC : STOPPED


AV HEAD
FL001
BP FILTER
FL003
BP FILTER
IC003
SS B
26
21
34
5
42
2
FM DEMOD
23
21
19
20
IC 002
SW
MUTE
11
A
IC007
12
SWITCH
4
FL101
2
LOW PASS FILTER
8
B
IC001
3
16
NOISE REDUCATION
C
IC 602
3
AMP
1
D
IC 603
5
SWITCH
2
IC 604
3
AMP
1
E
I
TO LINE OUT

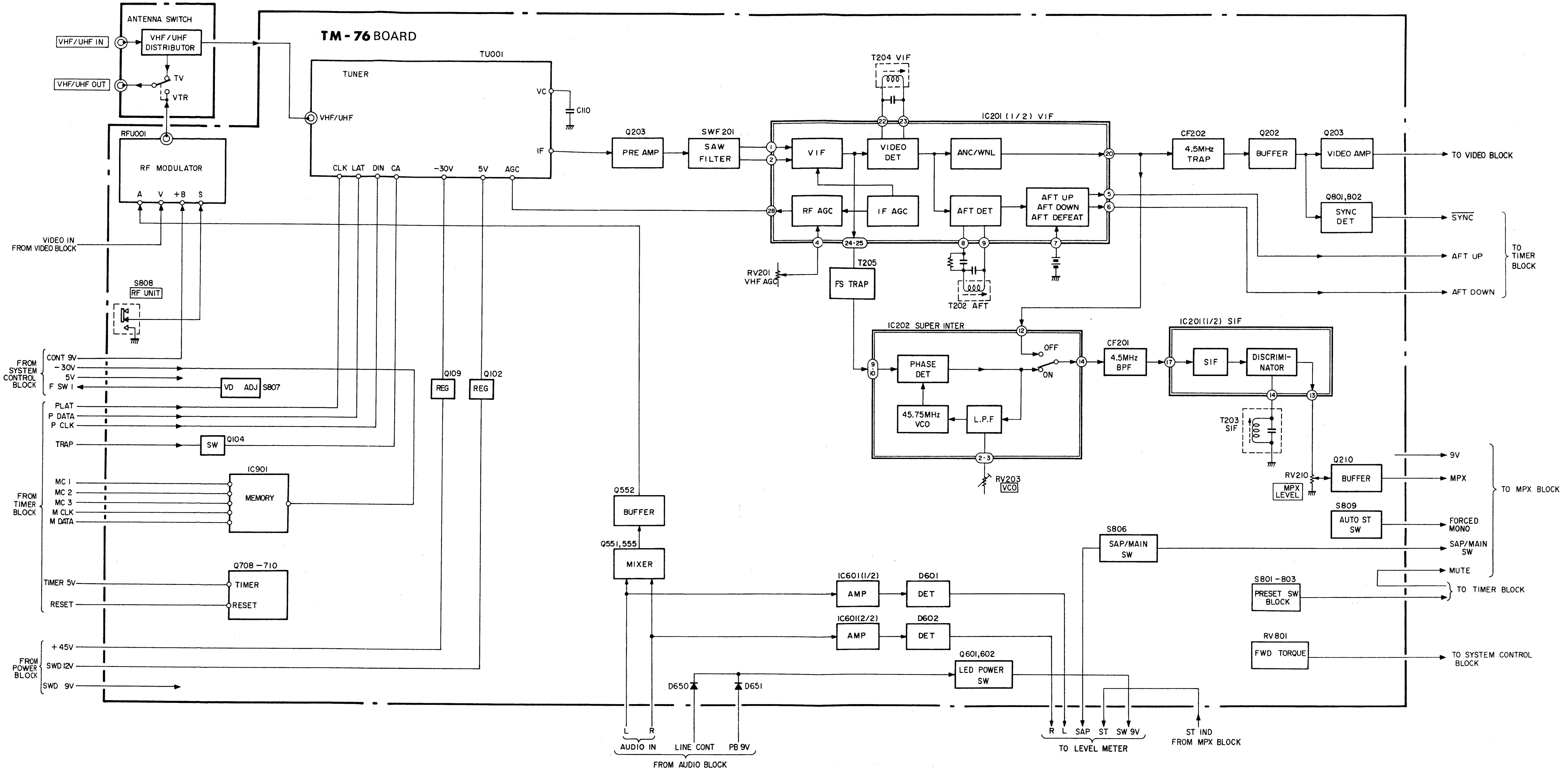


3-22. MTS BLOCK DIAGRAM



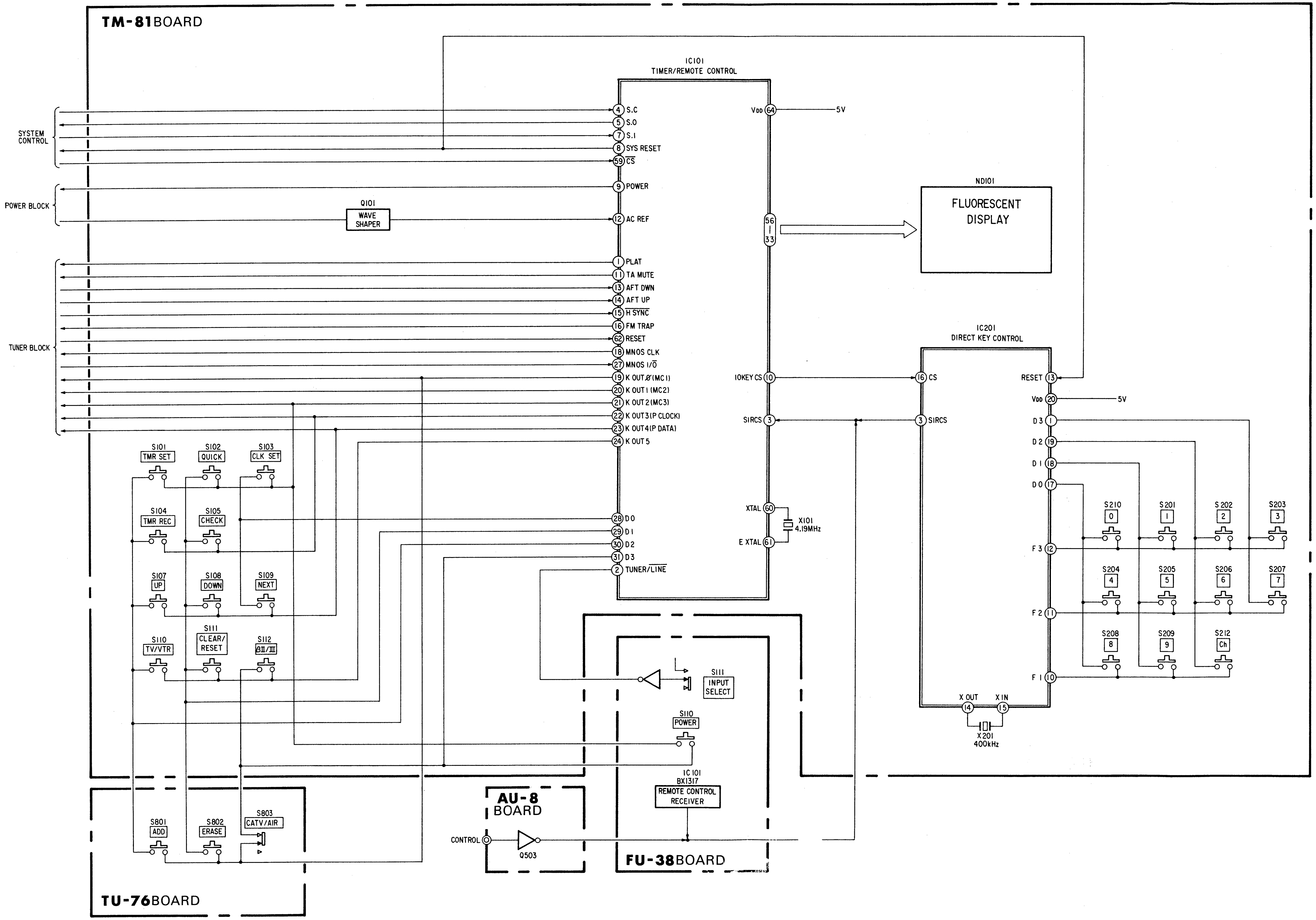
MP-7 BOARD
MPX IN
MAIN/SAP SELECT
MUTE
STEREO IND
FORCED MONO
9V
MUTE
FROM TUNER BLOCK
AUDIO OUT MAIN / SAP
AUDIO OUT L
AUDIO OUT R
TO AUDIO BLOCK
IC801 CX20112 MTS DECODER
RV802 SAP FILTER
RV803 SAP VCO (5fH)
RV805 STEREO VCO (4fH)
B.P.F
SAP DET
L.P.F
CARRER
MUTE
Q871 SW
Q870 MUTE
IC870 M5201L
SAP B.P.F + SW
RV803 PILOT CANCEL
L.P.F
B.P.F
PILOT
STEREO DISCRI
B.P.F
L-R DET
L.P.F
L-R'
DE-EMP
RV806 MAIN LEVEL
MATRIX
L+R
L-R
IC830 AN6291 NOISE REDUCTION
RV830 TIME CONST
Q832 B.P.F
Q833 B.P.F
RMS
RMS
VARIABLE GAIN
FIX DE-EMP
VARIABLE DE-EMP
IC831 (1/2)
IC831 (1/2)
RV831 VARIABLE DE-EMP
RV832 SEPARATION

3-23. TUNER BLOCK DIAGRAM

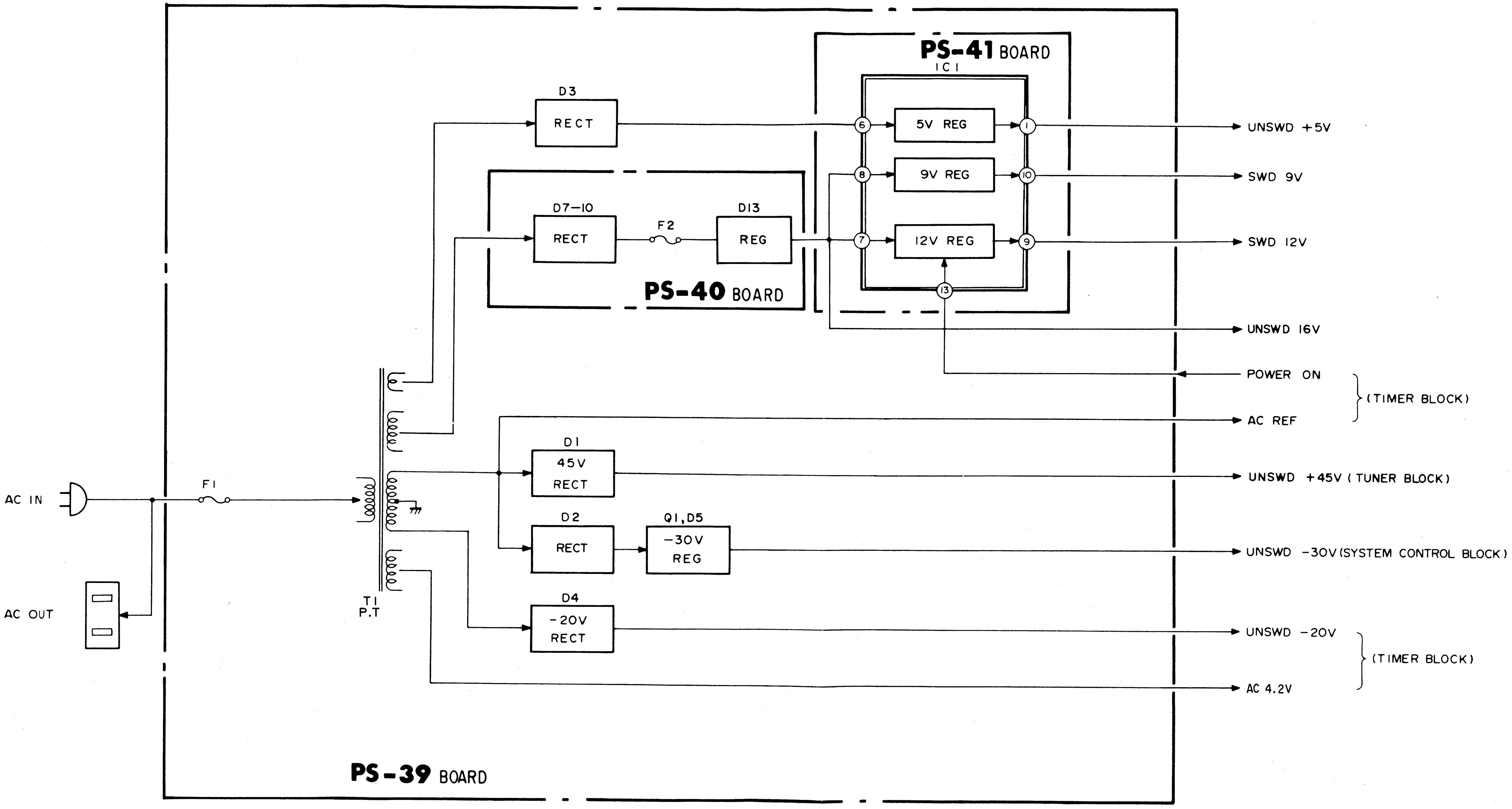


ANTENNA SWITCH
VHF/UHF IN
VHF/UHF DISTRIBUTOR
VHF/UHF OUT
TV
VTR
RFU001
RF MODULATOR
A
V
+B
S
VIDEO IN FROM VIDEO BLOCK
S808
RF UNIT
TM-76 BOARD
TU001
TUNER
VHF/UHF
VC
IF
C110
CLK
LAT
DIN
CA
-30V
5V
AGC
Q203
PRE AMP
SWF 201
SAW FILTER
T204 VIF
IC201 (1/2) VIF
VIF
VIDEO DET
ANC/WNL
RF AGC
IF AGC
AFT DET
AFT UP
AFT DOWN
AFT DEFEAT
RV201
VHF AGC
T205
FS TRAP
T202 AFT
CF202
4.5MHz TRAP
Q202
BUFFER
Q203
VIDEO AMP
TO VIDEO BLOCK
Q801,802
SYNC DET
SYNC
AFT UP
AFT DOWN
TO TIMER BLOCK
IC202 SUPER INTER
PHASE DET
OFF
ON
45.75MHz VCO
L.P.F
RV203
VCO
CF201
4.5MHz BPF
IC201(1/2) SIF
SIF
DISCRIMI-NATOR
T203 SIF
RV210
MPX LEVEL
Q210
BUFFER
9V
MPX
TO MPX BLOCK
S809
AUTO ST SW
FORCED MONO
SAP/MAIN SW
MUTE
S806
SAP/MAIN SW
S801-803
PRESET SW BLOCK
TO TIMER BLOCK
RV801
FWD TORQUE
TO SYSTEM CONTROL BLOCK
FROM SYSTEM CONTROL BLOCK
CONT 9V
-30V
5V
F SW 1
VD ADJ
S807
Q109
REG
Q102
REG
PLAT
P DATA
P CLK
TRAP
SW
Q104
FROM TIMER BLOCK
MC 1
MC 2
MC 3
M CLK
M DATA
IC901
MEMORY
Q708-710
TIMER 5V
RESET
TIMER
RESET
FROM POWER BLOCK
+45V
SWD 12V
SWD 9V
Q552
BUFFER
Q551,555
MIXER
IC601(1/2)
AMP
D601
DET
IC601(2/2)
AMP
D602
DET
Q601,602
LED POWER SW
D650
D651
L
R
AUDIO IN
LINE CONT
PB 9V
FROM AUDIO BLOCK
R
L
SAP
ST
SW 9V
TO LEVEL METER
ST IND
FROM MPX BLOCK

3-24. TIMER BLOCK DIAGRAM

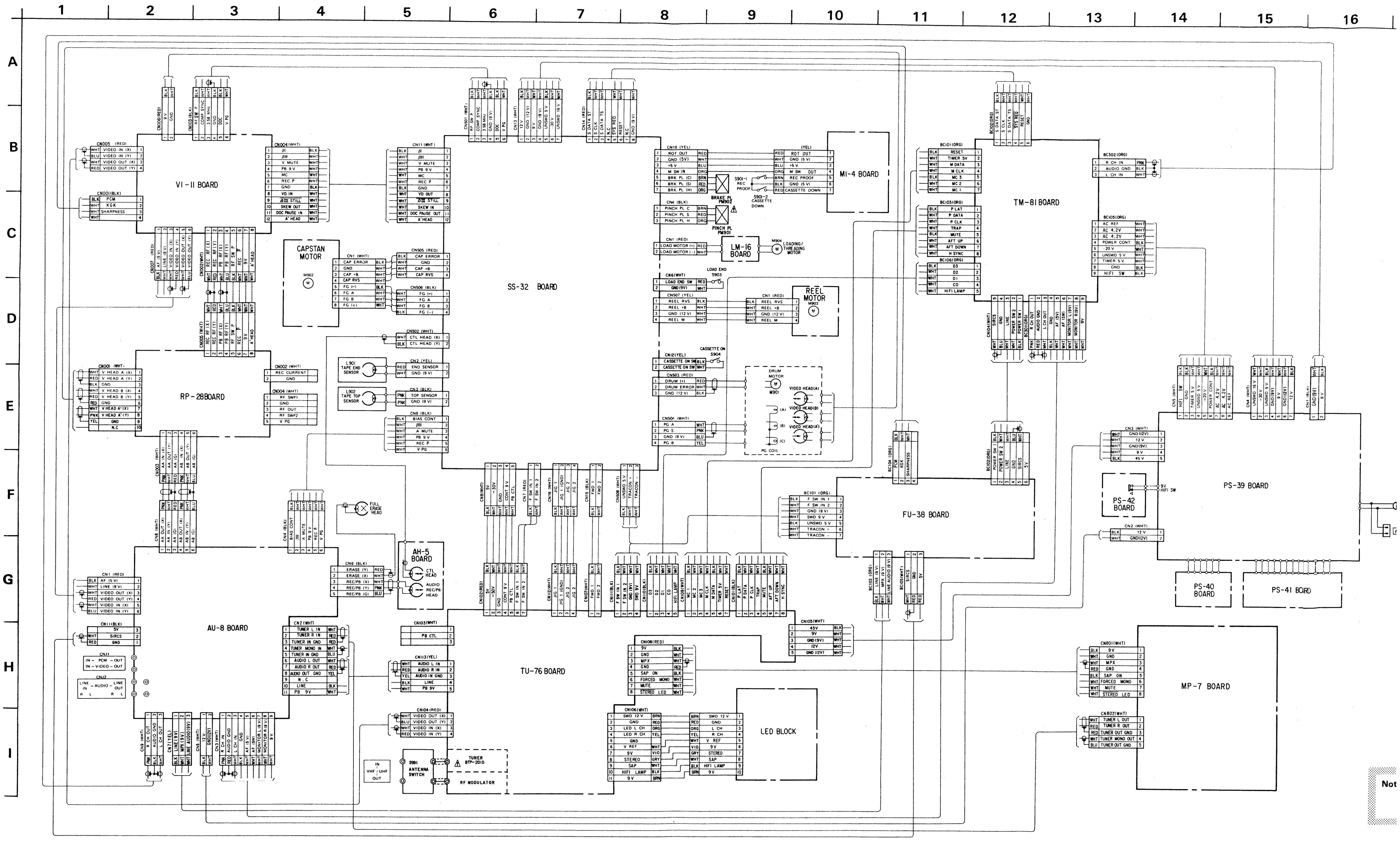

TM-81 BOARD
SYSTEM CONTROL
POWER BLOCK
TUNER BLOCK
Q101
WAVE SHAPER
IC101
TIMER/REMOTE CONTROL
4 S.C
5 S.O
7 S.I
8 SYS RESET
59 CS
9 POWER
12 AC REF
1 PLAT
11 TA MUTE
13 AFT DWN
14 AFT UP
15 H SYNC
16 FM TRAP
62 RESET
18 MNOS CLK
27 MNOS I/O
19 K OUT0 (MC1)
20 K OUT1 (MC2)
21 K OUT2 (MC3)
22 K OUT3 (P CLOCK)
23 K OUT4 (P DATA)
24 K OUT5
28 D0
29 D1
30 D2
31 D3
2 TUNER/LINE
VDD 64
5V
56 | 33
10KEY CS 10
SIRCS 3
XTAL 60
E XTAL 61
X101 4.19MHz
ND101
FLUORESCENT DISPLAY
IC201
DIRECT KEY CONTROL
16 CS
3 SIRCS
RESET 13
VDD 20
5V
D3 1
D2 19
D1 18
D0 17
F3 12
F2 11
F1 10
X OUT 14
X IN 15
X201 400kHz
S210 0
S201 1
S202 2
S203 3
S204 4
S205 5
S206 6
S207 7
S208 8
S209 9
S212 Ch
S101 TMR SET
S102 QUICK
S103 CLK SET
S104 TMR REC
S105 CHECK
S107 UP
S108 DOWN
S109 NEXT
S110 TV/VTR
S111 CLEAR/RESET
S112 ØII/III
S111 INPUT SELECT
S110 POWER
IC101 BX1317
REMOTE CONTROL RECEIVER
FU-38 BOARD
AU-8 BOARD
CONTROL
Q503
TU-76 BOARD
S801 ADD
S802 ERASE
S803 CATV/AIR

3-25. POWER BLOCK DIAGRAM

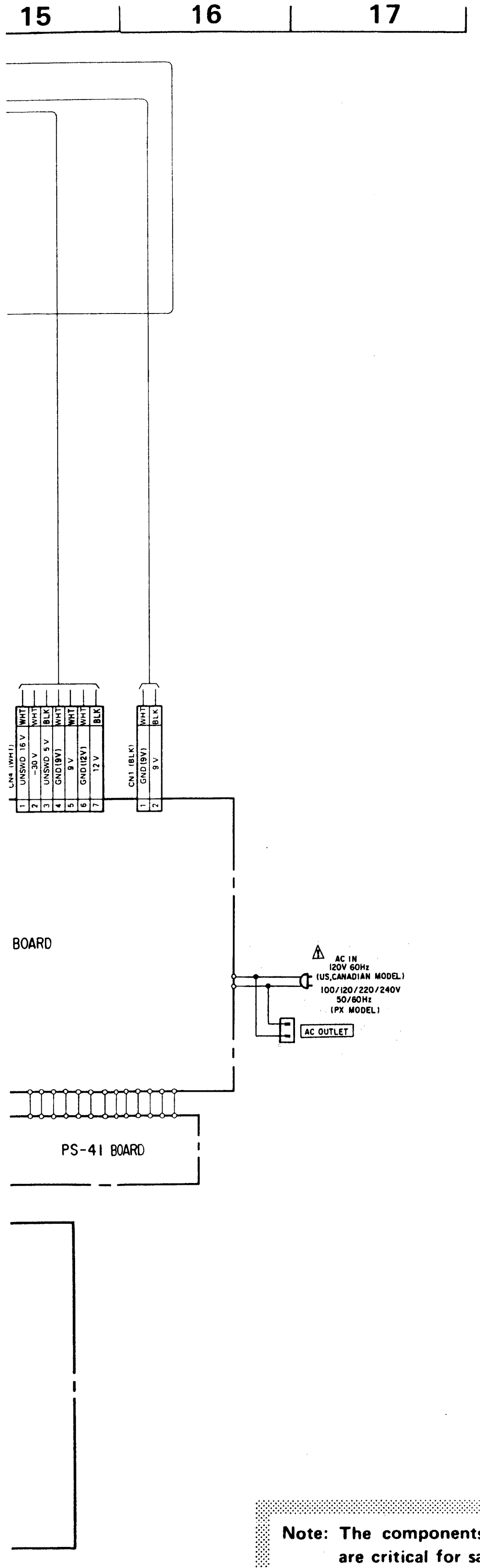

PS-41 BOARD
IC1
D3
RECT
5V REG
9V REG
12V REG
UNSWD +5V
SWD 9V
SWD 12V
D7–10
RECT
F2
D13
REG
PS-40 BOARD
UNSWD 16V
POWER ON
AC REF
(TIMER BLOCK)
D1
45V RECT
UNSWD +45V (TUNER BLOCK)
AC IN
F1
D2
RECT
Q1,D5
-30V REG
UNSWD -30V (SYSTEM CONTROL BLOCK)
AC OUT
T1
P.T
D4
-20V RECT
UNSWD -20V
AC 4.2V
(TIMER BLOCK)
PS-39 BOARD
6
8
7
1
10
9
13

SECTION 4
SCHEMATIC DIAGRAM AND PRINTED WIRING BOARDS

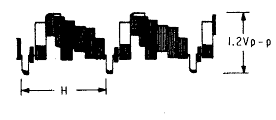
4-1. FRAME SCHEMATIC DIAGRAM


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
VI-11 BOARD
RP-28BOARD
AU-8 BOARD
CAPSTAN MOTOR
SS-32 BOARD
MI-4 BOARD
LM-16 BOARD
REEL MOTOR
BRAKE PL PM902
PINCH PL PM901
TM-81 BOARD
FU-38 BOARD
PS-39 BOARD
PS-42 BOARD
PS-40 BOARD
PS-41 BOARD
AH-5 BOARD
FULL ERASE HEAD
L901 TAPE END SENSOR
L902 TAPE TOP SENSOR
DRUM MOTOR M901
VIDEO HEAD(A)
VIDEO HEAD(B)
VIDEO HEAD(A')
PG COIL
TU-76 BOARD
LED BLOCK
MP-7 BOARD
TUNER BTP-2010
RF MODULATOR
S991 ANTENNA SWITCH
IN VHF/UHF OUT
CNJ1
CNJ2

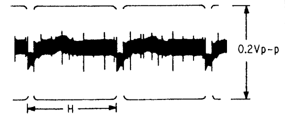
Not


15
16
17
CN4 (WHT)
1 UNSWD 16 V WHT
2 -30 V WHT
3 UNSWD 5 V BLK
4 GND (9V) WHT
5 9 V WHT
6 GND (12V) WHT
7 12 V BLK
CN1 (BLK)
1 GND (9V) WHT
2 9 V BLK
BOARD
AC IN
120V 60Hz
(US,CANADIAN MODEL)
100/120/220/240V
50/60Hz
(PX MODEL)
AC OUTLET
PS-41 BOARD

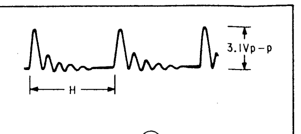
VI-11 BOARD



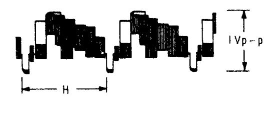
IC101 ③ REC



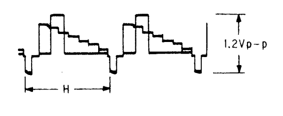
IC301 ③ REC/PB



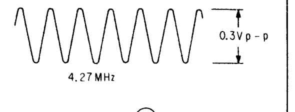
IC401 ㉘ REC/PB



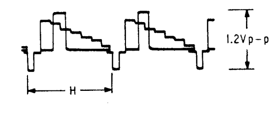
IC101 ⑤ REC



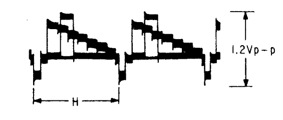
IC301 ⑫ REC



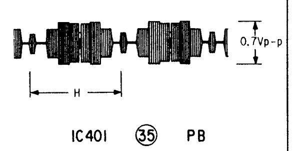
IC401 ㉝ REC/PB



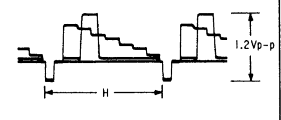
IC101 ⑥ ㊷ REC



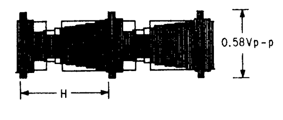
IC301 ⑫ PB



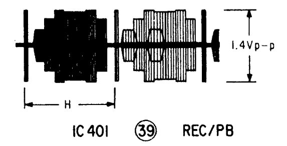
IC401 ㉟ PB



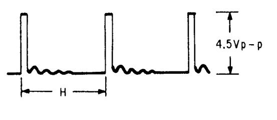
IC101 ⑦ REC



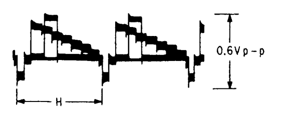
IC301 ⑭ REC/PB



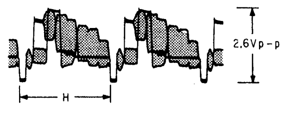
IC401 ㊴ REC/PB



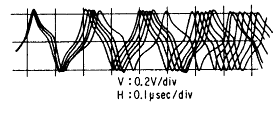
IC101 ⑩ REC/PB



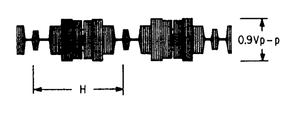
IC301 ㉖ PB



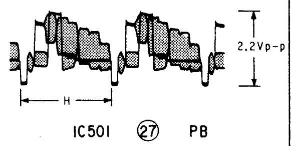
IC501 ㉒ PB



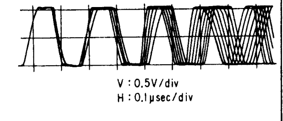
IC101 ⑳ PB



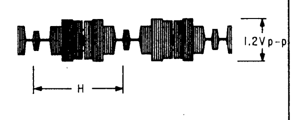
IC401 ① REC



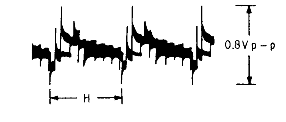
IC501 ㉗ PB



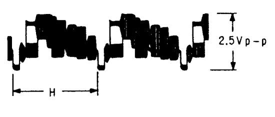
IC101 ㉕ REC



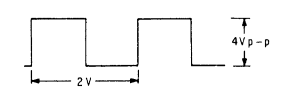
IC401 ① PB



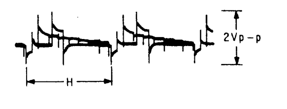
Q104 Ⓔ PB



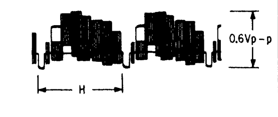
IC101 ㉟ PB



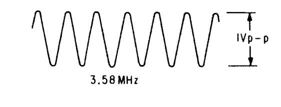
IC401 ⑨ REC/PB



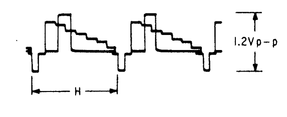
Q205 Ⓒ REC



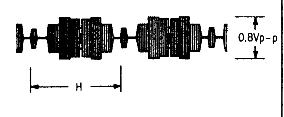
IC101 ㊺ REC



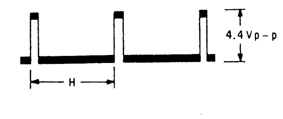
IC401 ⑭ REC/PB



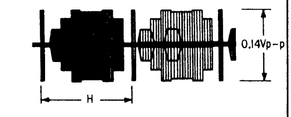
Q302 Ⓔ REC/PB



IC101 ㊺ PB



IC401 ㉒ REC/PB

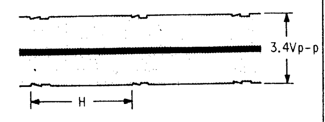


Q405 Ⓔ REC

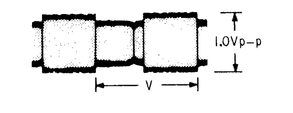
Note: **The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.**

Note: **Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piece portant le numéro spécifié.**

RP-28 BOARD



IC001 ④ ㉕ REC

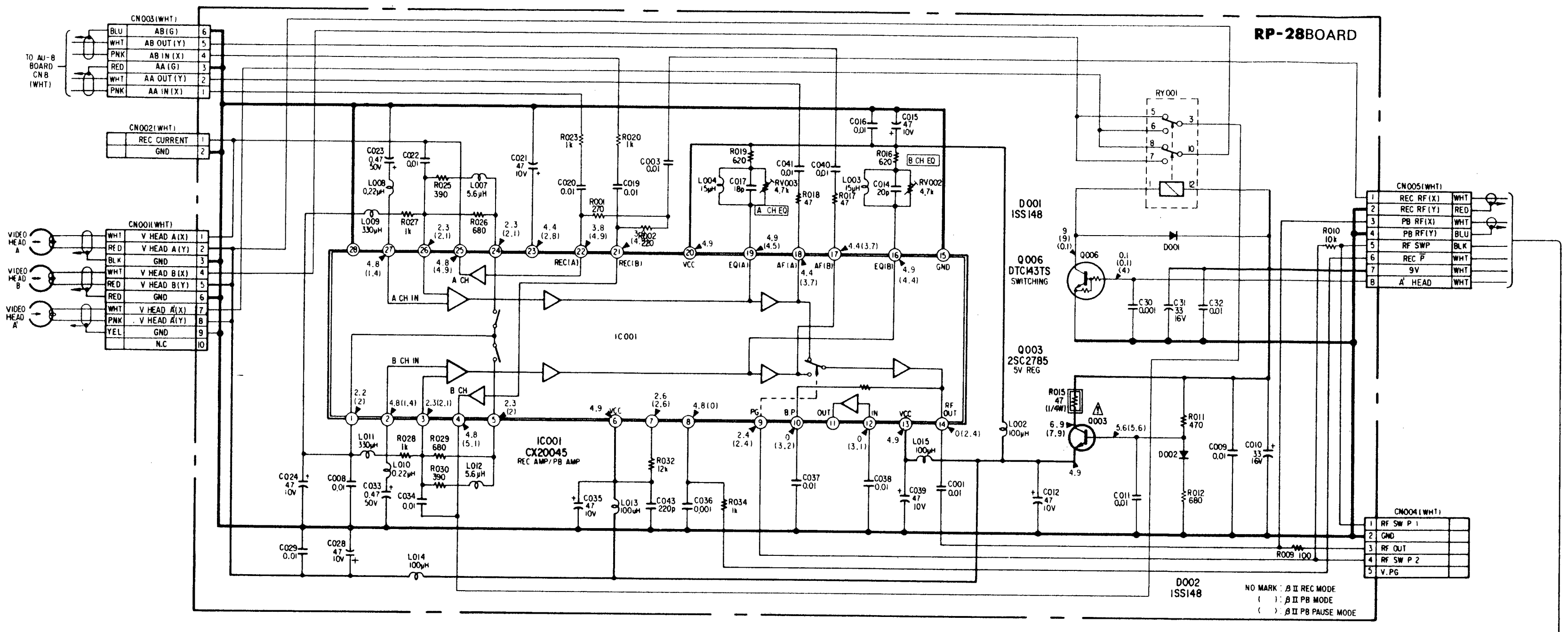


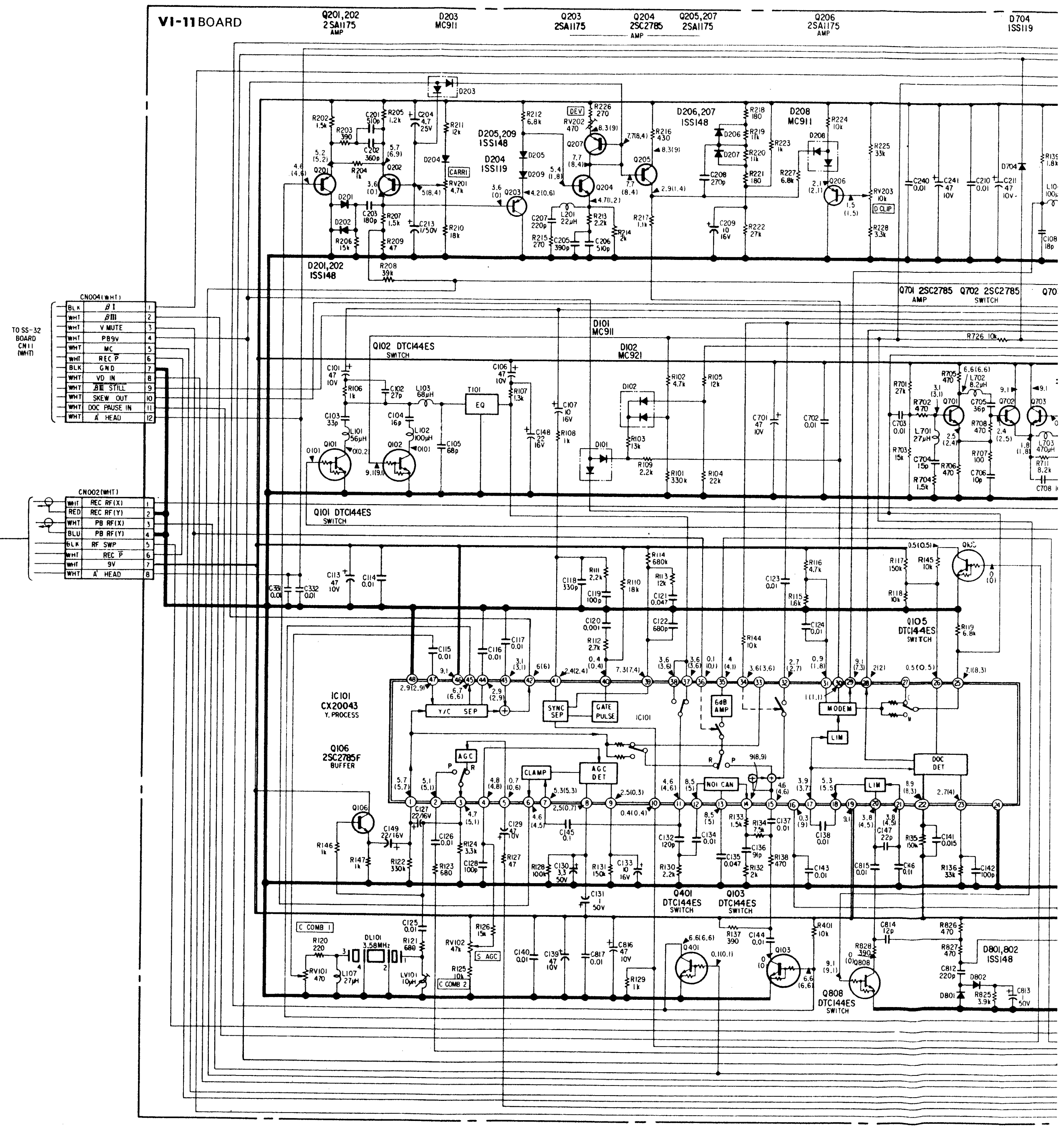
IC001 ⑭ PB

4-2. SCHEMATIC DIAGRAM AND PRINTED WIRING BOARDS

RP-28 (RF SIGNAL PROCESS) **VI-11** (Y, C SIGNAL PROCESS) SCHEMATIC DIAGRAMS

— Ref. No. RP-28 BOARD: 8100 series, VI-11BOARD: 1000 series —


RP-28BOARD
TO AU-8 BOARD CN8 (WHT)
CN003(WHT)
CN002(WHT)
CN001(WHT)
VIDEO HEAD A
VIDEO HEAD B
VIDEO HEAD A'
IC001 CX20045 REC AMP/PB AMP
A CH IN
B CH IN
Q006 DTC143TS SWITCHING
Q003 2SC2785 5V REG
D001 1SS148
D002 1SS148
RY001
CN005(WHT)
CN004(WHT)
NO MARK : β II REC MODE
( ) : β II PB MODE
( ) : β II PB PAUSE MODE


VI-11BOARD
Q201,202 2SA1175 AMP
D203 MC911
Q203 2SA1175
Q204 2SC2785
Q205,207 2SA1175 AMP
Q206 2SA1175 AMP
D704 1SS119
D201,202 1SS148
D205,209 1SS148
D204 1SS119
D206,207 1SS148
D208 MC911
Q701 2SC2785 AMP
Q702 2SC2785 SWITCH
TO SS-32 BOARD CN11 (WHT)
CN004(WHT)
CN002(WHT)
Q102 DTC144ES SWITCH
D101 MC911
D102 MC921
Q101 DTC144ES SWITCH
Q105 DTC144ES SWITCH
IC101 CX20043 Y, PROCESS
Q106 2SC2785F BUFFER
Y/C SEP
SYNC SEP
GATE PULSE
AGC
CLAMP
AGC DET
NOI CAN
6dB AMP
MODEM
LIM
DOC DET
Q401 DTC144ES SWITCH
Q103 DTC144ES SWITCH
Q808 DTC144ES SWITCH
D801,802 1SS148

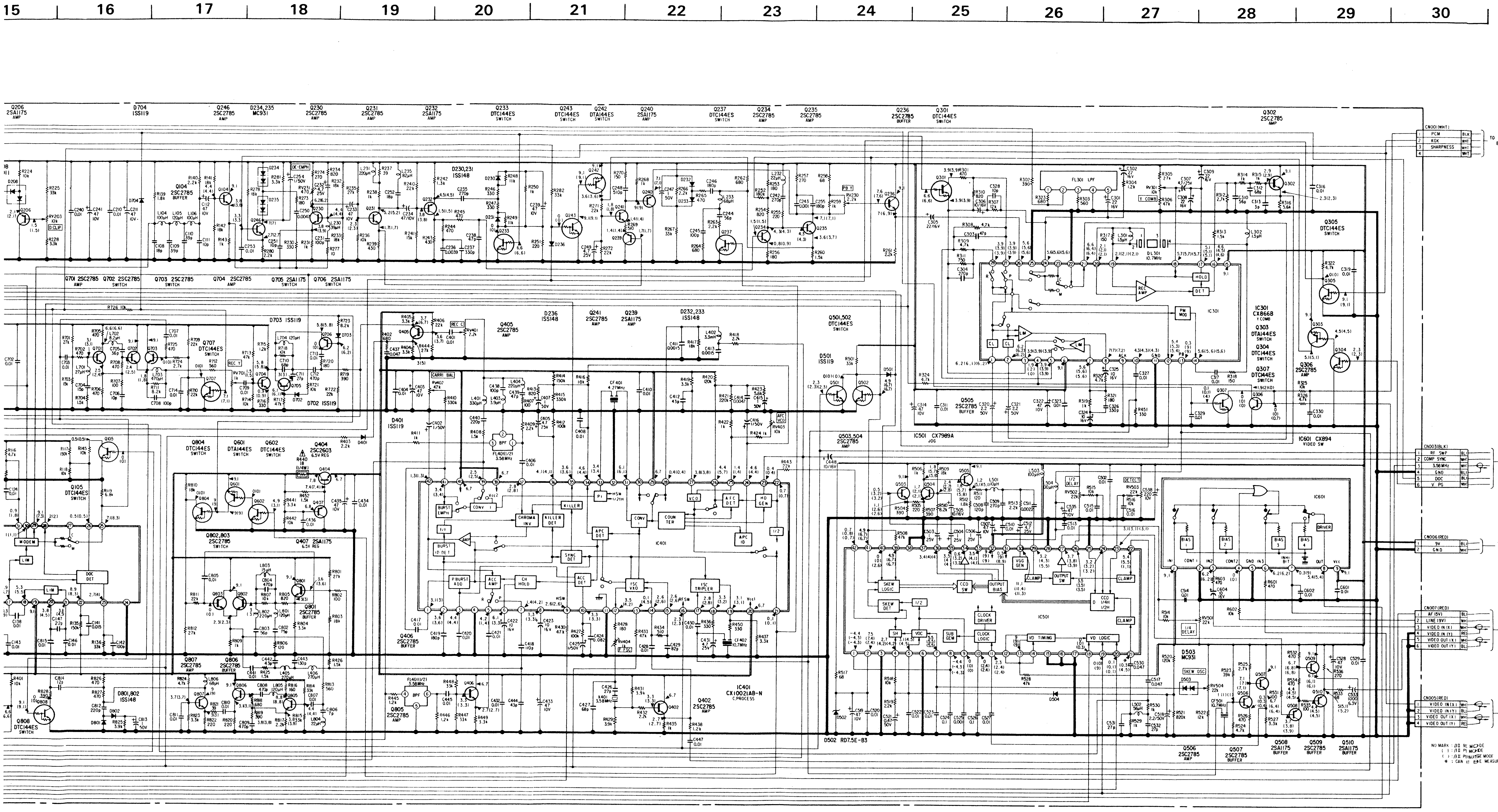
Note:

- All resistors are in ohms, 1/6W unless otherwise noted. kΩ = 1000Ω, MΩ = 1000kΩ
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- The red lines show the main voltages.
- All voltages are dc measured with a VOM (10MΩ).

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piece portant le numéro spécifié.

When indicating parts by reference number, please include the board name.


15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
Q206 2SA1175 AMP
D704 1SS119
Q246 2SC2785 AMP
D234,235 MC931
Q230 2SC2785 AMP
Q231 2SC2785 AMP
Q232 2SA1175 AMP
Q233 DTC144ES SWITCH
Q243 DTC144ES SWITCH
Q242 DTA144ES SWITCH
Q240 2SA1175 AMP
Q237 DTC144ES SWITCH
Q234 2SC2785 AMP
Q235 2SC2785 AMP
Q236 2SC2785 BUFFER
Q301 DTC144ES SWITCH
Q302 2SC2785 AMP
Q104 2SC2785 BUFFER
D230,231 1SS148
D236 1SS148
FL301 LPF
DL301 10.7MHz
Q701 2SC2785 AMP
Q702 2SC2785 SWITCH
Q703 2SC2785 SWITCH
Q704 2SC2785 AMP
Q705 2SA1175 SWITCH
Q706 2SA1175 SWITCH
D703 1SS119
Q707 DTC144ES SWITCH
D702 1SS119
Q405 2SC2785 AMP
Q241 2SC2785 AMP
Q239 2SA1175 AMP
D232,233 1SS148
Q501,502 DTC144ES SWITCH
D501 1SS119
IC301 CX8668 Y COMB
Q303 DTA144ES SWITCH
Q304 DTC144ES SWITCH
Q307 DTC144ES SWITCH
Q305 DTC144ES SWITCH
Q306 2SC2785 AMP
D401 1SS119
CF401 4.27MHz
FL401(1/2) 3.58MHz
Q505 2SC2785 BUFFER
IC501 CX7989A JOG
IC601 CX894 VIDEO SW
Q105 DTC144ES SWITCH
Q804 DTC144ES SWITCH
Q601 DTA144ES SWITCH
Q602 DTC144ES SWITCH
Q404 2SC2603 6.5V REG
Q503,504 2SC2785 AMP
Q802,803 2SC2785 SWITCH
Q407 2SA1175 6.5V REG
Q801 2SC2785 BUFFER
Q406 2SC2785 BUFFER
IC401 CX10021AB-N C.PROCESS
CF402 10.7MHz
Q807 2SC2785 AMP
Q806 2SC2785 BUFFER
D801,802 1SS148
Q808 DTC144ES SWITCH
FL401(1/2) 3.58MHz
Q805 2SC2785 AMP
X401 3.58MHz
Q402 2SC2785 AMP
D503 MC931
CF501 10.7MHz
D502 RD7.5E-B3
Q506 2SC2785 AMP
Q507 2SC2785 BUFFER
Q508 2SA1175 BUFFER
Q509 2SC2785 BUFFER
Q510 2SA1175 BUFFER
MODEM
LIM
DOC DET
BURST EMPH
CONV
CHROMA INV
KILLER DET
KILLER
P/I
CONV
COUN TER
VCO
AFC DET
HD GEN
APC DET
APC ID
SYNC DET
BURST ID DET
ACC AMP
CH HOLD
ACC DET
P.BURST ADD
FSC VXO
FSC TRIPLER
REC AMP
HOLD
DET
FM MOD
SKEW LOGIC
SKEW DET
CCD SW
OUTPUT BIAS
VGG GEN
CLAMP
OUTPUT SW
CCD 1/4H 1/2H
CLOCK DRIVER
CLOCK LOGIC
SUB GEN
S/H
VDC
VD TIMING
VD LOGIC
SKEW OSC
1/4 DELAY
1/2 DELAY
DETECT
BIAS 1
BIAS 2
BIAS 3
BIAS 4
DRIVER
CN001(WHT)
1 PCM BLK
2 KGK WHT
3 SHARPNESS WHT
4 WHT
TO FU-38 BOARD BC104(ORG)
CN003(BLK)
1 RF SWP BL
2 COMP SYNC WHT
3 3.58MHz WHT
4 GND BL
5 DOC BL
6 V PG WHT
TO SS-32 BOARD CN501(WHT)
CN006(RED)
1 9V BL
2 GND WHT
TO PS-39 BOARD CN1(BLK)
CN007(RED)
1 AF (5V) BL
2 LINE (9V) WHT
3 VIDEO IN (X) WHT
4 VIDEO IN (Y) RED
5 VIDEO OUT (X) WHT
6 VIDEO OUT (Y) BL
TO AU-8 BOARD CN1(RED)
CN005(RED)
1 VIDEO IN (X) WHT
2 VIDEO IN (Y) BL
3 VIDEO OUT (X) WHT
4 VIDEO OUT (Y) RED
TO TU-76 BOARD CN104(RED)

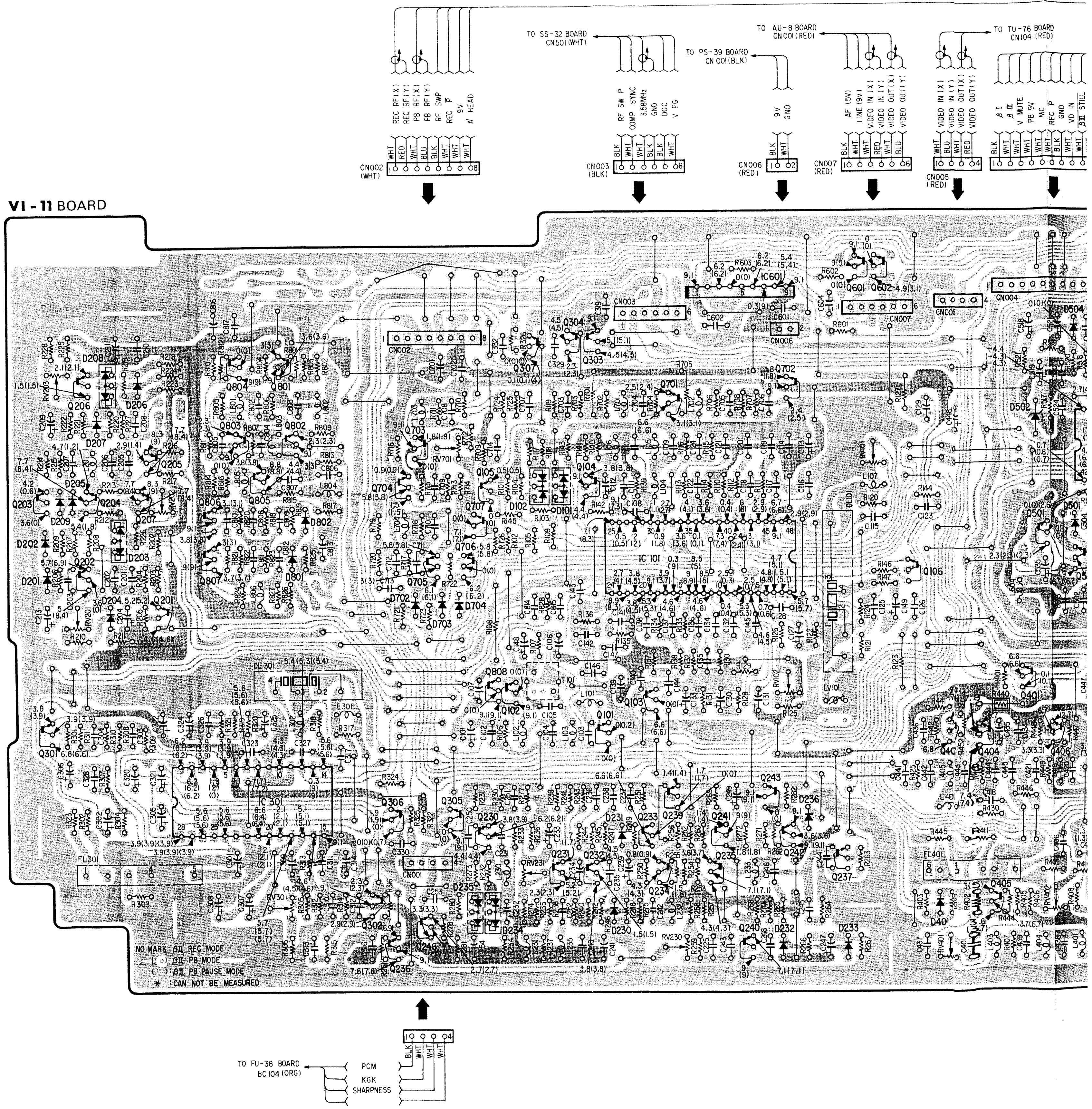
NO MARK : βII REC MODE
( ) : βII PB MODE
( ) : βII PB PAUSE MODE
* : CAN NOT BE MEASURED

RP-28 (RF SIGNAL PROCESS) VI-11 (Y, C SIGNAL PROCESS) PRINTED WIRING BOARDS

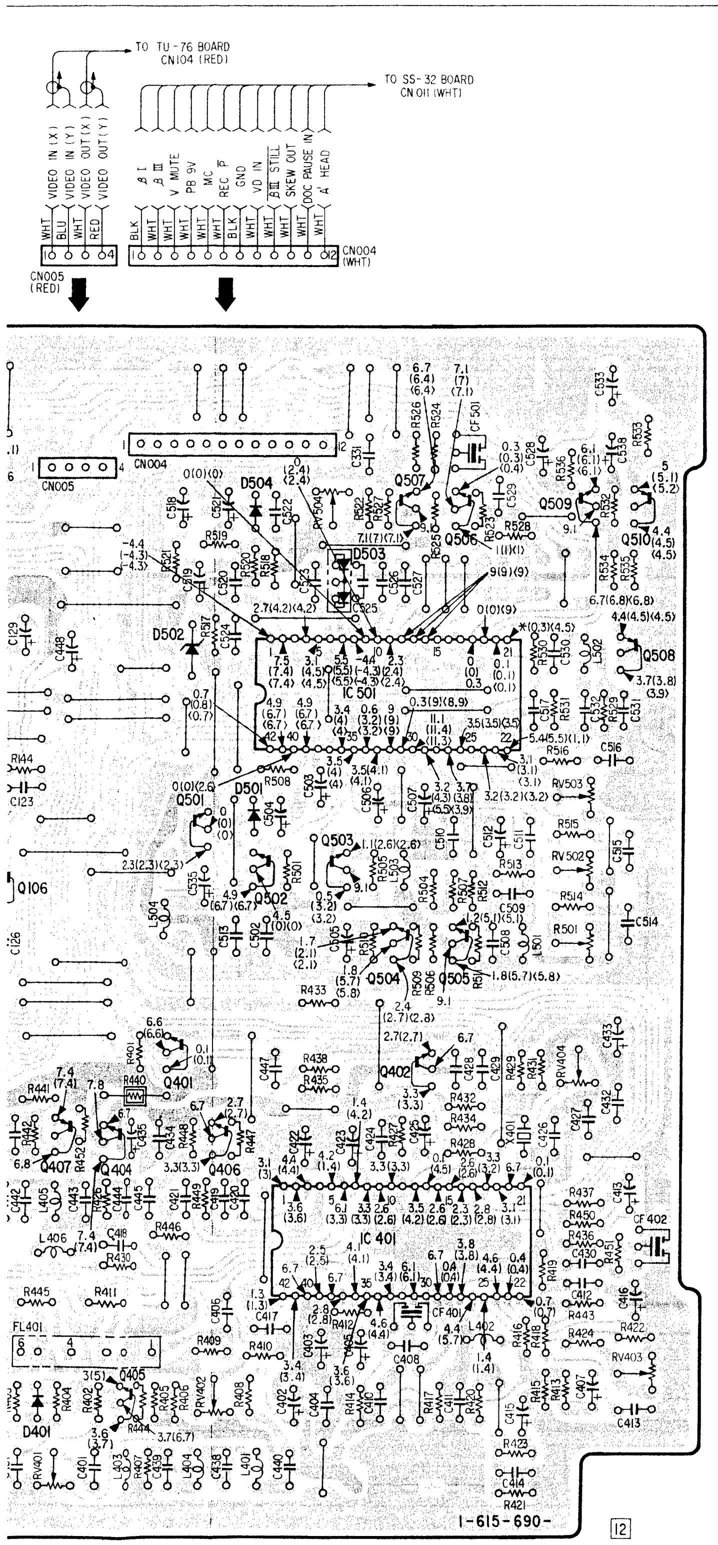
— Ref. No. RP-28 BOARD: 8100 series, VI-11BOARD: 1000 series —

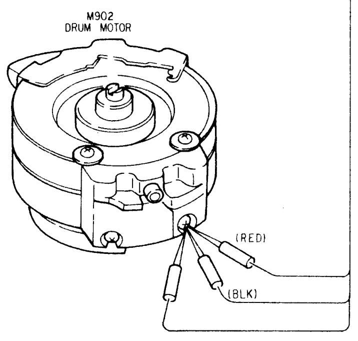
- ○— : Indicates a leadwire mounted on the component side.
- ●— : Indicates a leadwire mounted on the printed side.
- ▨ soldering side.
- ▨ B + pattern
- Digital transistor (RP-28: Q006, VI-11: Q101, 102, 103, 105, 233, 237, 242, 243, 244, 301, 303, 304, 305, 307, 401, 501, 502, 601, 602, 707, 804, 808) transistor with resistors. Refer to the PR-28, VI-11 board schematic diagram for digital transistor.

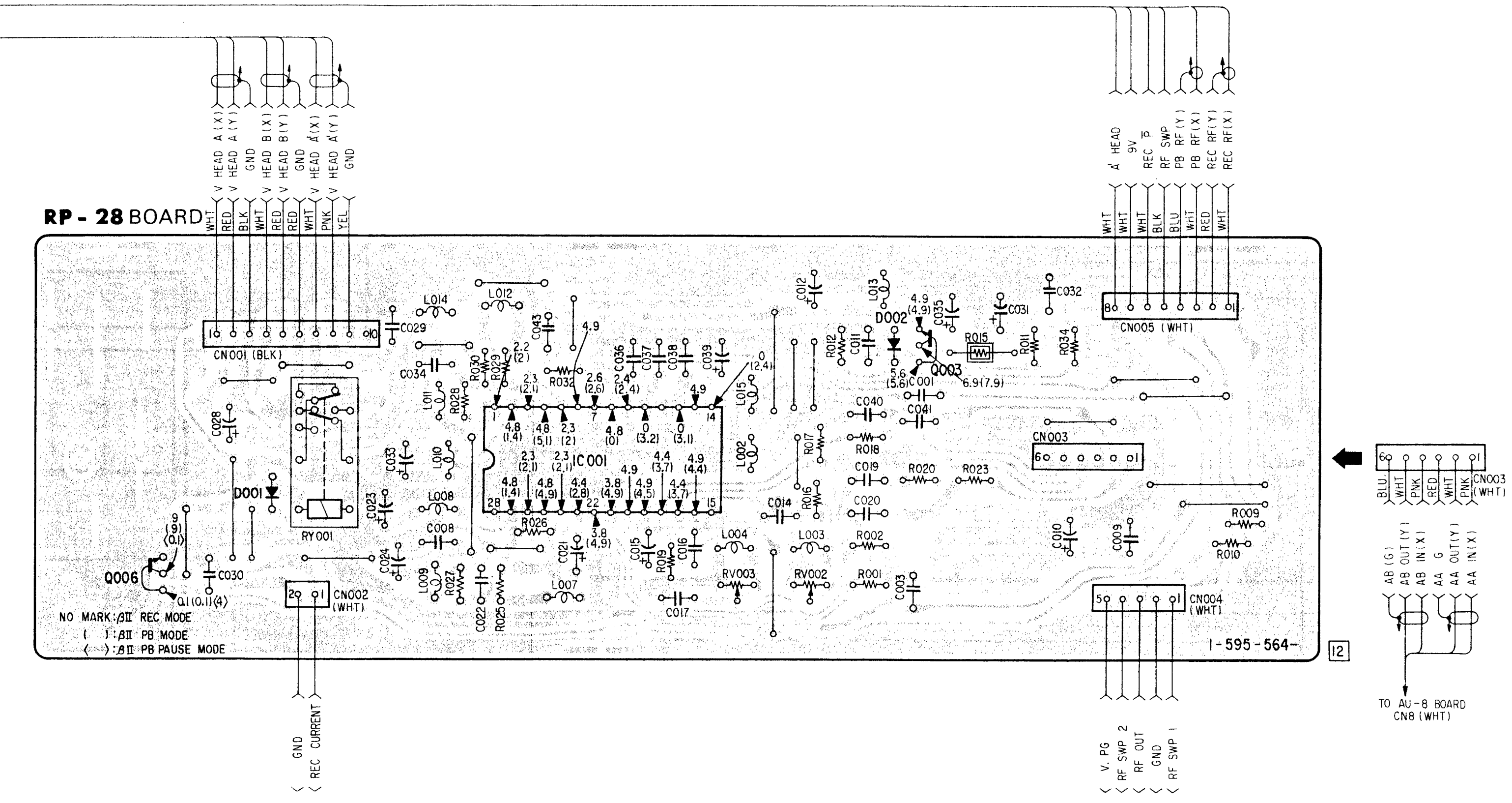
Q, IC	D	ADJ
IC601 601,602		
507,506 509,510	504	RV504
307,304,303		
	503	
804,801		RV203
206	208	
702	206	
701		
508	207 502	
IC501		
803,802		RV701
205 703		RV101
805	102,101	
704,105,104		
203,204,207	209,205	RV202
806	802	RV503
707 501	501	
IC101	203	
	202	
502,503		
807 705,706 106	801	RV502
202	201	
	702,703,704	
201 504,505	204	RV501
		RV201
401		
808		RV102,RV404
102 103 402		LV101
301 101 407,404,406		
IC401		
IC301		
239,243		
306,305	236	
230 233 241,242	231	
237		
231,232		RV231
234,235		RV403
302 405	235,234 401	RV301 RV402
	230	
246		
236 240		RV230
		RV401
	232,233	
Q, IC	D	ADJ


1 2 3 4 5 6 7 8 9 10 11 12
A B C D E F G H I
VI-11 BOARD
CN002 (WHT)
REC RF(X)
REC RF(Y)
PB RF(X)
PB RF(Y)
RF SWP
REC P̄
9V
A' HEAD
WHT RED WHT BLU BLK WHT WHT WHT
TO SS-32 BOARD CN501 (WHT)
CN003 (BLK)
RF SW P
COMP SYNC
3.58MHz
GND
DOC
V PG
BLK WHT WHT BLK BLK WHT
TO PS-39 BOARD CN001 (BLK)
CN006 (RED)
9V
GND
BLK WHT
TO AU-8 BOARD CN001 (RED)
CN007 (RED)
AF (5V)
LINE (9V)
VIDEO IN (X)
VIDEO IN (Y)
VIDEO OUT (X)
VIDEO OUT (Y)
BLK WHT WHT RED WHT BLU
TO TU-76 BOARD CN104 (RED)
CN005 (RED)
VIDEO IN (X)
VIDEO IN (Y)
VIDEO OUT (X)
VIDEO OUT (Y)
WHT BLU WHT RED
β I
β III
V MUTE
PB 9V
MC
REC P̄
GND
VD IN
βIII STILL
BLK WHT WHT WHT WHT WHT BLK WHT WHT
IC601 IC101 IC301 IC401
NO MARK : βII REC MODE
( ) : βII PB MODE
⟨ ⟩ : βII PB PAUSE MODE
* : CAN NOT BE MEASURED
TO FU-38 BOARD BC104 (ORG)
PCM
KGK
SHARPNESS
BLK WHT WHT WHT

D	001	002
Q · IC	006 IC001	003
ADJ	RV003 RV002	


TO TU-76 BOARD CN104 (RED)
TO SS-32 BOARD CN011 (WHT)
VIDEO IN (X)
VIDEO IN (Y)
VIDEO OUT (X)
VIDEO OUT (Y)
CN005 (RED)
CN004 (WHT)
IC 501
IC 401
Q501
Q502
Q503
Q504
Q505
Q506
Q507
Q508
Q509
Q510
Q401
Q402
Q404
Q406
Q407
Q405
D501
D502
D503
D504
D401
FL401
CF401
CF402
CF501
1-615-690-
12

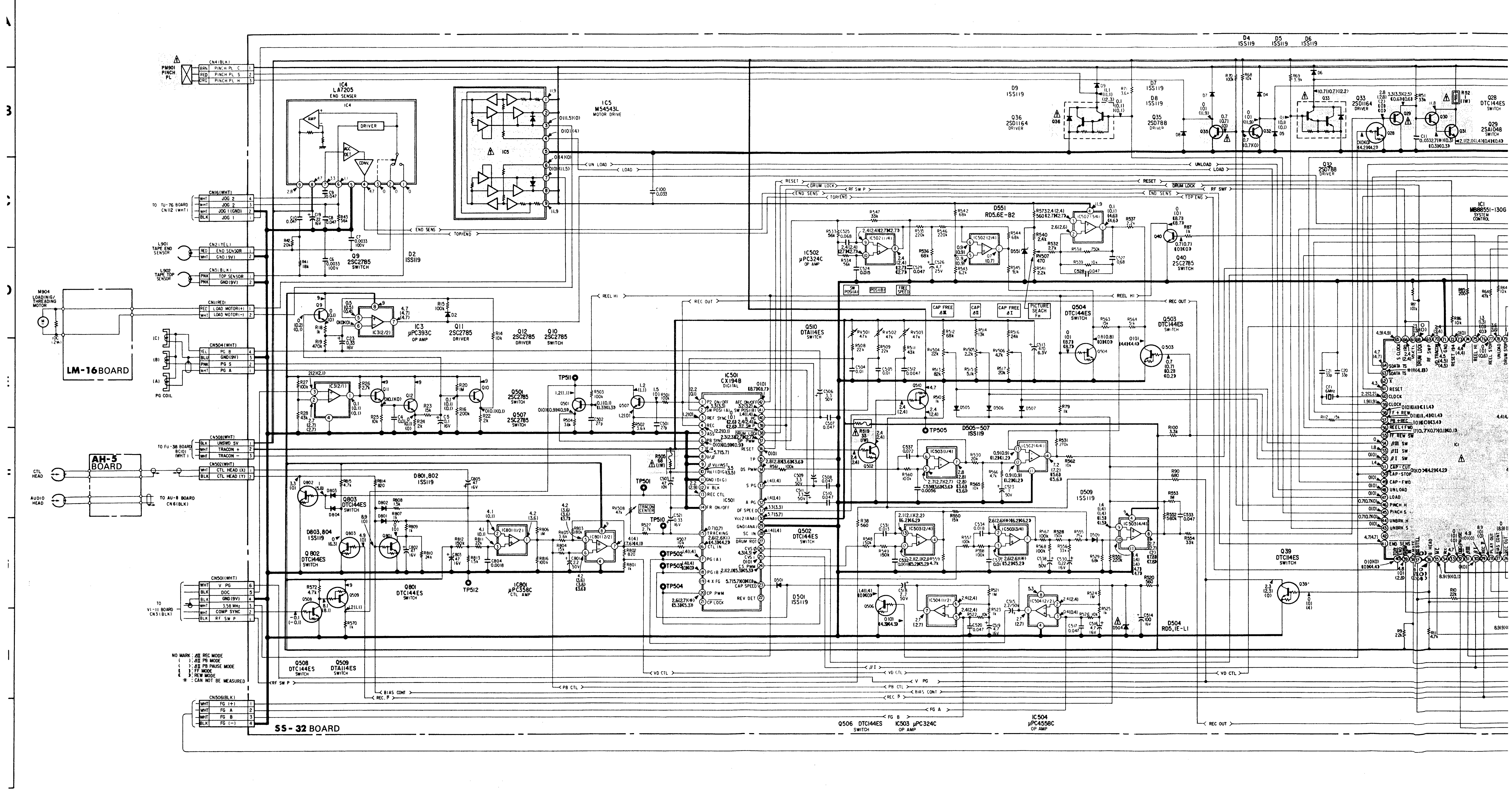

M902
DRUM MOTOR
(RED)
(BLK)

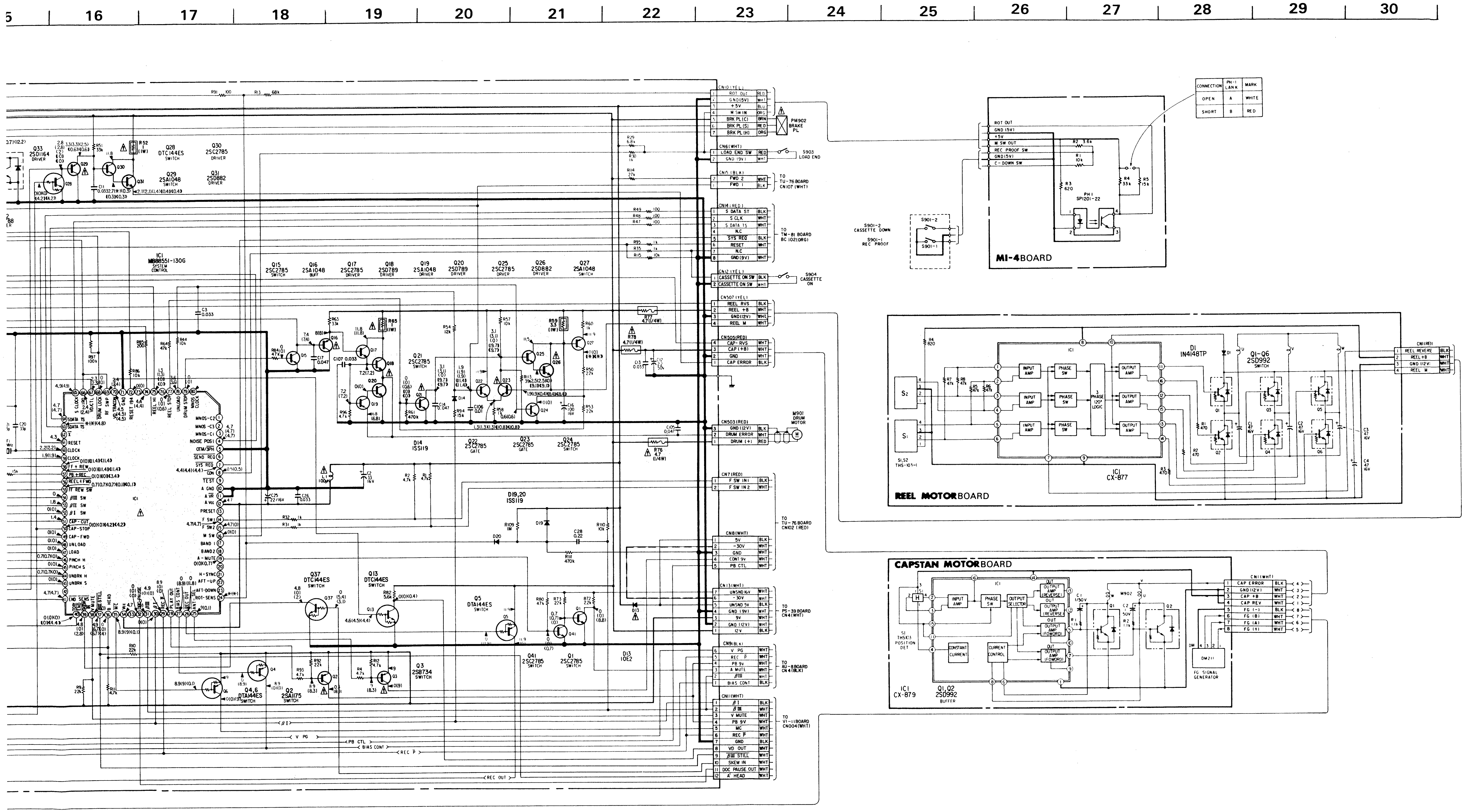

RP-28 BOARD
V HEAD A (X)
V HEAD A (Y)
GND
V HEAD B (X)
V HEAD B (Y)
GND
V HEAD Á (X)
V HEAD Á (Y)
GND
CN001 (BLK)
IC001
RY001
D001
D002
Q003
Q006
RV002
RV003
CN002 (WHT)
CN003 (WHT)
CN004 (WHT)
CN005 (WHT)
Á HEAD
9V
REC
RF SWP
PB RF (Y)
PB RF (X)
REC RF (Y)
REC RF (X)
GND
REC CURRENT
V. PG
RF SWP 2
RF OUT
GND
RF SWP 1
AB (G)
AB OUT (Y)
AB IN (X)
G
AA OUT (Y)
AA IN (X)
TO AU-8 BOARD CN8 (WHT)
NO MARK: βII REC MODE
( ): βII PB MODE
⟨ ⟩: βII PB PAUSE MODE
1-595-564-
12

LM-16 (NOISE FILTER) **SS-32** (SERVO, SYSTEM CONTROL) **MI-4** (CASSETTE CONTROL) **AH-4** **REEL MOTOR** **CAPSTAN MOTOR** SCHEMATIC DIAGRAMS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

— Ref. No. LM-16BOARD: 9100 series, SS-32 BOARD: 2000 series, MI-4 BOARD: 8200 series, REEL MOTOR BOARD: 8000 series, CAPSTAN MOTOR BOARD: 9000 series—


PM901 PINCH PL
CN4(BLK)
IC4 LA7205 END SENSER
IC5 M54543L MOTOR DRIVE
CN16(WHT)
TO TU-76 BOARD CN112 (WHT)
L901 TAPE END SENSOR
L902 TAPE TOP SENSOR
M904 LOADING/THREADING MOTOR
LM-16BOARD
PG COIL
CN504(WHT)
IC3 µPC393C OP AMP
Q11 2SC2785 DRIVER
Q12 2SC2785 DRIVER
Q10 2SC2785 SWITCH
Q9 2SC2785 SWITCH
D2 1SS119
CN508(WHT)
TO FU-38 BOARD BC(O) (WHT)
CN502(WHT)
CTL HEAD
AUDIO HEAD
AH-5 BOARD
TO AU-8 BOARD CN6(BLK)
Q803 DTC144ES SWITCH
D803,804 1SS119
Q802 DTC144ES SWITCH
D801,802 1SS119
Q801 DTC144ES SWITCH
IC801 µPC358C CTL AMP
Q501 2SC2785 SWITCH
Q507 2SC2785 SWITCH
IC501 CX194B DIGITAL
Q510 DTA114ES SWITCH
IC502 µPC324C OP AMP
D551 RD5.6E-B2
Q504 DTC144ES SWITCH
Q503 DTC144ES SWITCH
D505~507 1SS119
D509 1SS119
Q502 DTC144ES SWITCH
D501 1SS119
D504 RD5.1E-L1
CN501(WHT)
TO VI-11 BOARD CN3(BLK)
Q508 DTC144ES SWITCH
Q509 DTA114ES SWITCH
NO MARK : ßII REC MODE
( ) : ßII PB MODE
( ) : ßII PB PAUSE MODE
【 】: FF MODE
《 》: REW MODE
* : CAN NOT BE MEASURED
CN506(BLK)
SS-32 BOARD
Q506 DTC144ES SWITCH
IC503 µPC324C OP AMP
IC504 µPC4558C OP AMP
D9 1SS119
Q36 2SD1164 DRIVER
D7 1SS119
D8 1SS119
Q35 2SD788 DRIVER
Q32 2SD788 DRIVER
Q33 2SD1164 DRIVER
Q28 DTC144ES SWITCH
Q29 2SA1048 SWITCH
Q40 2SC2785 SWITCH
Q39 DTC114ES SWITCH
D4 1SS119
D5 1SS119
D6 1SS119
IC1 MB88551-130G SYSTEM CONTROL


5
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
Q33 2SD1164 DRIVER
Q28 DTC144ES SWITCH
Q29 2SA1048 SWITCH
Q30 2SC2785 DRIVER
Q31 2SD882 DRIVER
IC1 MB88551-130G SYSTEM CONTROL
Q15 2SC2785 SWITCH
Q16 2SA1048 BUFF
Q17 2SC2785 DRIVER
Q18 2SD789 DRIVER
Q19 2SA1048 DRIVER
Q20 2SD789 DRIVER
Q25 2SC2785 DRIVER
Q26 2SD882 DRIVER
Q27 2SA1048 SWITCH
Q21 2SC2785 SWITCH
D14 1SS119
Q22 2SC2785 GATE
Q23 2SC2785 GATE
Q24 2SC2785 SWITCH
D19,20 1SS119
D13 10E2
Q37 DTC144ES SWITCH
Q13 DTC144ES SWITCH
Q5 DTA144ES SWITCH
Q41 2SC2785 SWITCH
Q1 2SC2785 SWITCH
Q4,6 DTA144ES SWITCH
Q2 2SA1175 SWITCH
Q3 2SB734 SWITCH
RESET
CLOCK
CAP-CUT
CAP-STOP
CAP-FWD
UNLOAD
LOAD
PINCH H
PINCH S
UNBRK H
UNBRK S
MNOS-C2
MNOS-C1
MNOS-C1
NOISE POSI
OTM/3PH
SEND REQ
SYS REQ
A GND
TEST
A VR
A Vcc
PRESET
F SW1
F SW2
M SW
BAND 1
BAND 2
A-MUTE
H-SYNC
AFT-UP
AFT-DOWN
ROT-SENS
CN10 (YEL)
1 ROT OUT RED
2 GND(5V) WHT
3 +5V BLU
4 M SW IN ORG
5 BRK PL(C) BRN
6 BRK PL(S) RED
7 BRK PL(H) ORG
PM902 BRAKE PL
CN6 (WHT)
1 LOAD END SW RED
2 GND (9V) WHT
S903 LOAD END
CN15 (BLK)
2 FWD 2 WHT
1 FWD 1 BLK
TO TU-76 BOARD CN107 (WHT)
CN14 (RED)
1 S DATA ST BLK
2 S CLK WHT
3 S DATA TS WHT
4 N.C
5 SYS REQ BLK
6 RESET WHT
7 N.C
8 GND (9V) WHT
TO TM-81 BOARD BC 102(ORG)
CN12 (YEL)
1 CASSETTE ON SW BLK
2 CASSETTE ON SW WHT
S904 CASSETTE ON
CN507 (YEL)
1 REEL RVS BLK
2 REEL +B WHT
3 GND(12V) WHT
4 REEL M WHT
CN505(RED)
4 CAP-RVS WHT
3 CAP (+B) WHT
2 GND WHT
1 CAP ERROR BLK
CN503 (RED)
3 GND (12V) BLK
2 DRUM ERROR WHT
1 DRUM (+) RED
M901 DRUM MOTOR
CN7 (RED)
1 F SW IN1 BLK
2 F SW IN2 WHT
TO TU-76 BOARD CN102 (RED)
CN8 (WHT)
1 5V BLK
2 -30V WHT
3 GND WHT
4 CONT 9V WHT
5 PB CTL WHT
CN13 (WHT)
7 UNSND 16V WHT
6 -30V WHT
5 UNSND 5V BLK
4 GND (9V) WHT
3 9V WHT
2 GND (12V) WHT
1 12V BLK
TO PS-39 BOARD CN4 (WHT)
CN9 (BLK)
6 V PG WHT
5 REC P̄ WHT
4 PB 9V WHT
3 A MUTE WHT
2 βIII WHT
1 BIAS CONT BLK
TO AU-8 BOARD CN4 (BLK)
CN11 (WHT)
1 βI BLK
2 βIII WHT
3 V MUTE WHT
4 PB 9V WHT
5 MC WHT
6 REC P̄ WHT
7 GND BLK
8 VD OUT WHT
9 βIII STILL WHT
10 SKEW IN WHT
11 DOC PAUSE OUT WHT
12 A' HEAD WHT
TO VI-11 BOARD CN004 (WHT)
V PG
PB CTL
BIAS CONT
REC P
REC OUT
S901-2 CASSETTE DOWN
S901-1 REC PROOF
CONNECTION PH-1 LANK MARK
OPEN A WHITE
SHORT B RED
ROT OUT
GND (5V)
+5V
M SW OUT
REC PROOF SW
GND (5V)
C-DOWN SW
PH1 SP1201-22
MI-4 BOARD
D1 1N4148TP
Q1-Q6 2SD992 SWITCH
IC1
INPUT AMP
PHASE SW
3 PHASE 120° LOGIC
OUTPUT AMP
S1,S2 THS-103-1
IC1 CX-877
CN1 (RED)
1 REEL REVERE BLK
2 REEL +B WHT
3 GND (12V) WHT
4 REEL M WHT
REEL MOTOR BOARD
CAPSTAN MOTOR BOARD
INPUT AMP
PHASE SW
OUTPUT SELECTOR
OUTPUT AMP (REVERSE)
OUTPUT AMP (FOWORD)
CONSTANT CURRENT
CURRENT CONTROL
S1 THS103 POSITION DET
M902
DM211 FG SIGNAL GENERATOR
IC1 CX-879
Q1,Q2 2SD992 BUFFER
CN1 (WHT)
1 CAP ERROR BLK
2 GND (12V) WHT
3 CAP +B WHT
4 CAP REV WHT
5 FG (-) BLK
6 FG (B) WHT
7 FG (A) WHT
8 FG (+) WHT

LM-16 (NOISE FILTER) SS-32 (SERVO, SYSTEM CONTROL) MI-4 (CASSETTE CONTROL) PRINTED WIRING BOARDS

Note (Schematic Diagrams):

- All resistors are in ohms, 1/6W unless otherwise noted. kΩ: 1000Ω; MΩ: 1000kΩ
- All capacitors are in μF unless otherwise noted. p: μμF 50WV or less are not indicated except for electrolytics.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : nonflammable resistor.
- : fusible resistor.
- The red lines show the main voltages.
- All voltages are dc measured with a VOM (10MΩ).

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piece portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Note (Printed Wiring Boards):

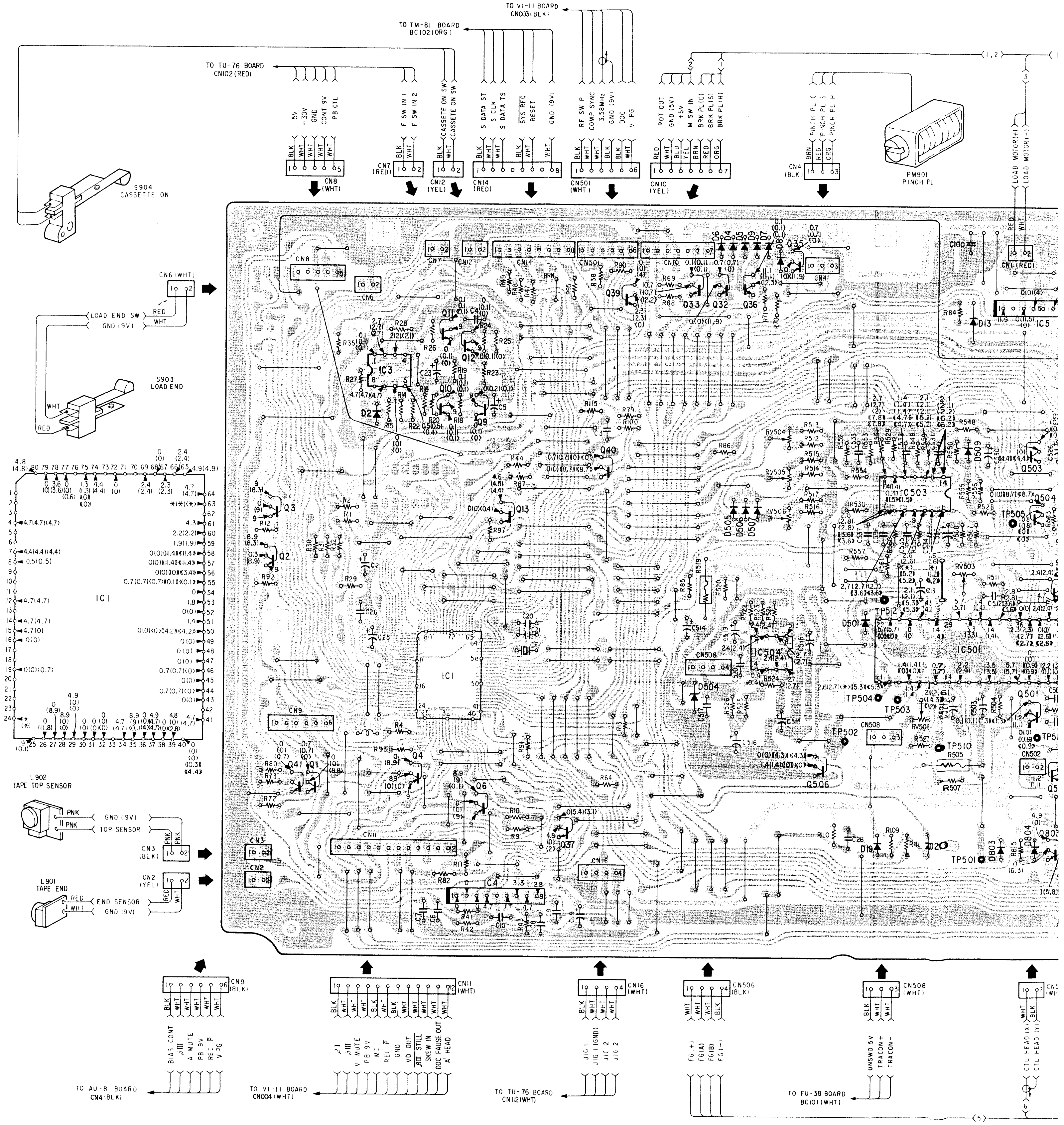
- o— : Indicates a leadwire mounted on the component side.
- •— : Indicates a leadwire mounted on the printed side.
- ▨ soldering side.
- component side
- ▨ B + pattern

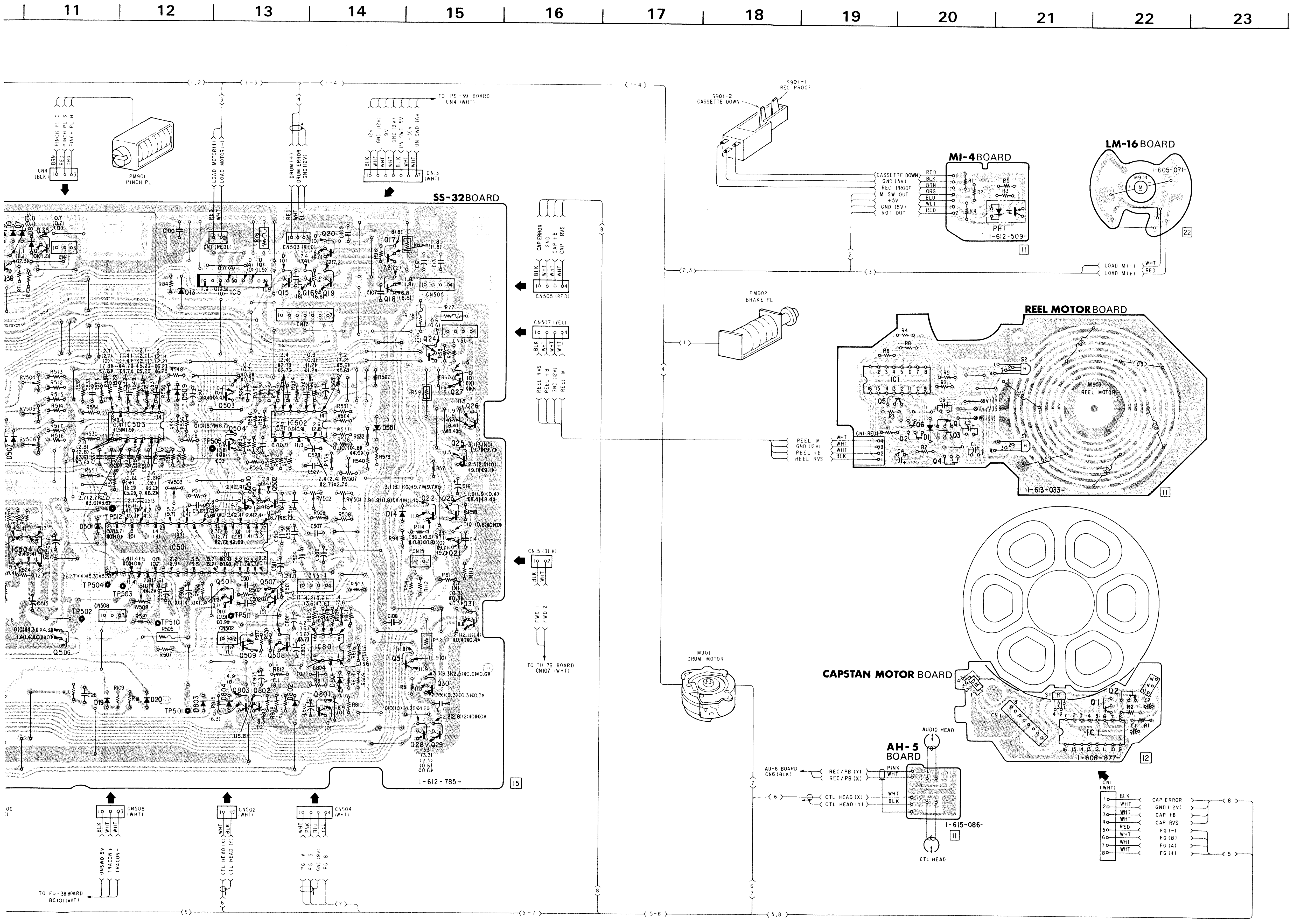
- Digital transistor (SS-32: Q004, 005, 006, 013, 028, 037, 039, 502, 503, 504, 506, 508, 509, 510, 801, 802, 803) transistor with resistors.
  Refer to the SS-32 board schematic diagram for digital transistor.

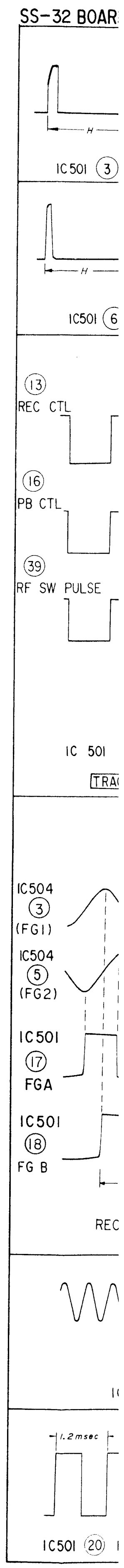
— Ref. No. LM-16 BOARD: 9100 series, SS-32 BOARD: 2000 series, MI-4 BOARD: 8200 series, REEL MOTOR BOARD: 8000 series.

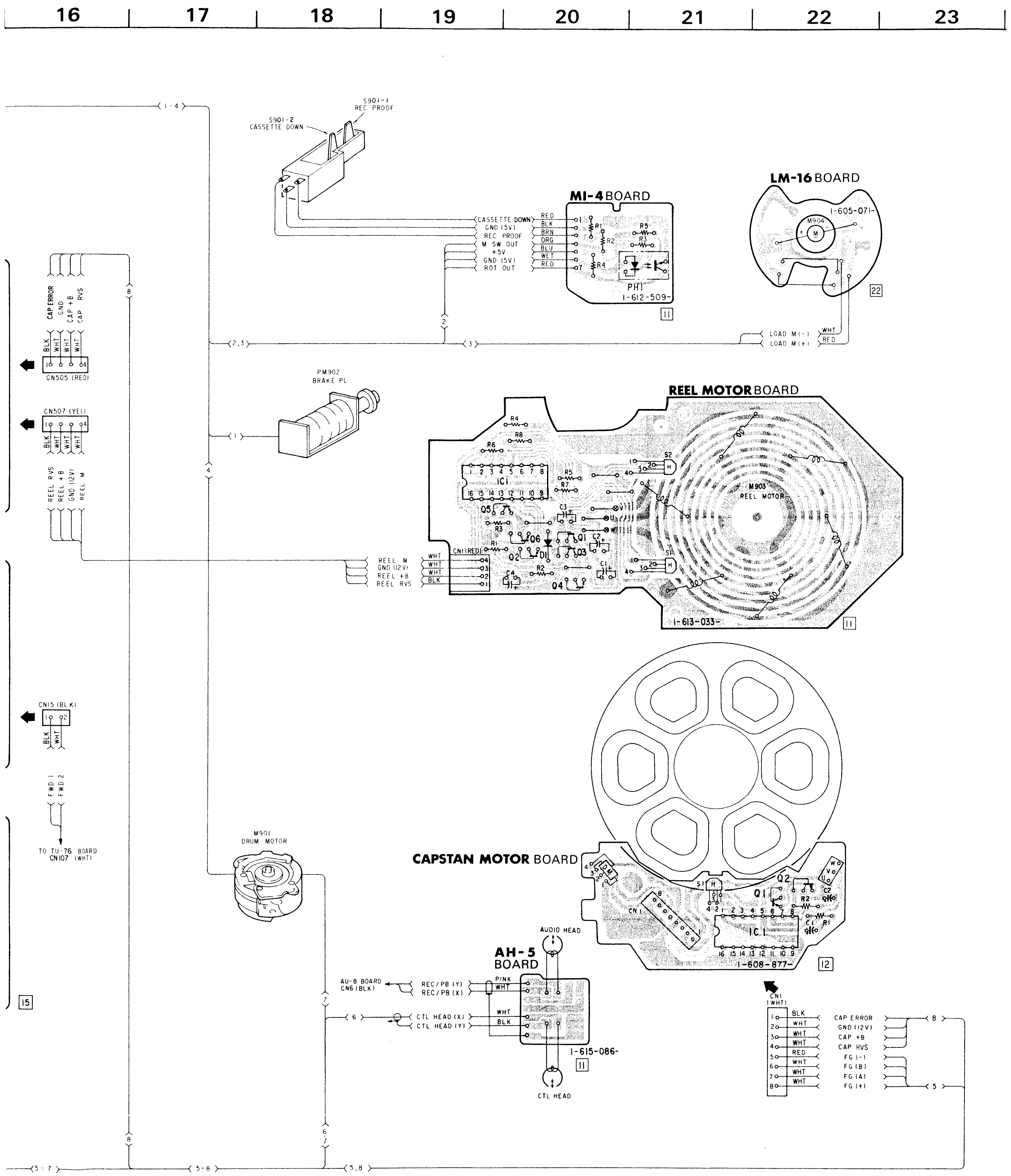
NO MARK : βII REC MODE
( ) : βII PB MODE
〈 〉 : βII PB PAUSE MODE
《 》 : FF MODE
« » : REW MODE
* : CAN NOT BE MEASURED

	Q · IC	D	ADJ · TP
C	35, 20 32, 15,16, 19 39,33,36, 17 18 IC5 11	6,4,5,9,7 8 13	
D	12 IC3 24 27 10,9 26	2 509	RV504
E	40 503 IC502 25 IC503 3 13 504 2	551 505, 506, 507	RV505 RV506 TP505 RV507 RV503,RV502,RV501
F	510 502 22,23 21 IC504, IC501 501 507 IC1 31	501 14 504	TP512 TP504,503
G	506 5 41,1,4,6 509,508 IC801 30		TP511 TP502 TP510 RV508
H	37 803,802,801 28,29 IC4	801 19,20 803,804,802	TP501

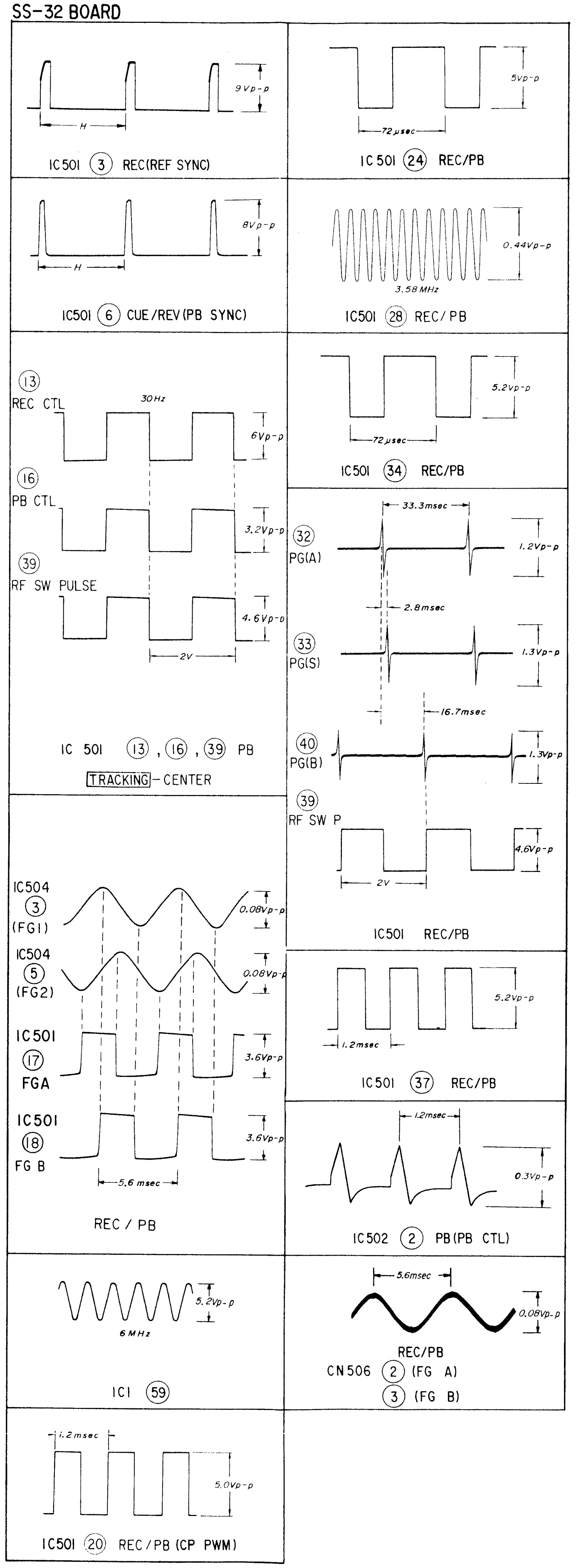

TO VI-II BOARD CN003 (BLK)
TO TM-81 BOARD BC102 (ORG)
TO TU-76 BOARD CN102 (RED)
5V
−30V
GND
CONT 9V
PB CTL
F SW IN 1
F SW IN 2
CASSETE ON SW
CASSETE ON SW
S DATA ST
S CLK
S DATA TS
SYS REQ
RESET
GND (9V)
RF SW P
COMP SYNC
3.58MHz
GND (9V)
DOC
V PG
ROT OUT
GND (5V)
+5V
M SW IN
BRK PL(C)
BRK PL(S)
BRK PL(H)
PINCH PL C
PINCH PL S
PINCH PL H
LOAD MOTOR(+)
LOAD MOTOR(−)
CN8 (WHT)
CN7 (RED)
CN12 (YEL)
CN14 (RED)
CN501 (WHT)
CN10 (YEL)
CN4 (BLK)
PM901 PINCH PL
CN1 (RED)
S904 CASSETTE ON
CN6 (WHT)
LOAD END SW
GND (9V)
S903 LOAD END
L902 TAPE TOP SENSOR
GND (9V)
TOP SENSOR
CN3 (BLK)
L901 TAPE END
END SENSOR
GND (9V)
CN2 (YEL)
IC1
IC3
IC5
IC501
IC503
IC504
CN9 (BLK)
BIAS CONT
βIII
A MUTE
PB 9V
REC P
V PG
TO AU-8 BOARD CN4 (BLK)
CN11 (WHT)
βI
βIII
V MUTE
PB 9V
MC
REC P
GND
VD OUT
βIII STILL
SKEW IN
DOC PAUSE OUT
A HEAD
TO VI-II BOARD CN004 (WHT)
CN16 (WHT)
JIG 1
JIG 1 (GND)
JIG 2
JIG 2
TO TU-76 BOARD CN112 (WHT)
CN506 (BLK)
FG (+)
FG (A)
FG (B)
FG (−)
CN508 (WHT)
UNSWD 5V
TRACON+
TRACON−
TO FU-38 BOARD BC101 (WHT)
CTL HEAD (X)
CTL HEAD (Y)


11
12
13
14
15
16
17
18
19
20
21
22
23
PM901 PINCH PL
CN4 (BLK)
PINCH PL C
PINCH PL S
PINCH PL H
LOAD MOTOR(+)
LOAD MOTOR(-)
DRUM (+)
DRUM ERROR
GND (12V)
TO PS-39 BOARD CN4 (WHT)
CN13 (WHT)
SS-32BOARD
CN1 (RED)
CN503 (RED)
IC5
CN505 (RED)
CN505
CN507 (YEL)
CN13
IC503
IC502
IC501
IC504
IC801
D501
D551
TP501
TP502
TP503
TP504
TP505
TP510
TP511
TP512
Q506
Q509
Q508
CN508
CN15 (BLK)
CN15
CN502 (WHT)
CN504 (WHT)
CN508 (WHT)
1-612-785-
15
CAP ERROR
GND
CAP +B
CAP RVS
REEL RVS
REEL +B
GND
REEL M
FWD 1
FWD 2
TO TU-76 BOARD CN107 (WHT)
UNSWD 5V
TRACON +
TRACON -
CTL HEAD (X)
CTL HEAD (Y)
PG A
FG S
GND (9V)
FG B
TO FU-38 BOARD BC101 (WHT)
S901-2 CASSETTE DOWN
S901-1 REC PROOF
MI-4BOARD
CASSETTE DOWN
GND (5V)
REC PROOF
M SW OUT
+5V
GND (5V)
ROT OUT
PH1
1-612-509-
11
LM-16BOARD
M904
1-605-071-
22
LOAD M (-)
LOAD M (+)
PM902 BRAKE PL
REEL MOTORBOARD
IC1
M903 REEL MOTOR
1-613-033-
11
REEL M
GND (12V)
REEL +B
REEL RVS
M901 DRUM MOTOR
CAPSTAN MOTOR BOARD
1-608-877-
12
AH-5 BOARD
AUDIO HEAD
CTL HEAD
AU-8 BOARD CN6 (BLK)
REC/PB (Y)
REC/PB (X)
CTL HEAD (X)
CTL HEAD (Y)
1-615-086-
11
CN1 (WHT)
CAP ERROR
GND (12V)
CAP +B
CAP RVS
FG (-)
FG (B)
FG (A)
FG (+)


SS-32 BOAR
IC501 ③
IC501 ⑥
⑬
REC CTL
⑯
PB CTL
㊴
RF SW PULSE
IC 501
TRA
IC504
③
(FG1)
IC504
⑤
(FG2)
IC501
⑰
FGA
IC501
⑱
FG B
REC
1.2msec
IC501 ⑳


16
17
18
19
20
21
22
23
S901-1 REC PROOF
S901-2 CASSETTE DOWN
MI-4 BOARD
CASSETTE DOWN
GND (5V)
REC PROOF
M SW OUT
+5V
GND (5V)
ROT OUT
RED
BLK
BRN
ORG
BLU
WHT
RED
PH1
1-612-509-
11
LM-16 BOARD
1-605-071-
M904
22
LOAD M (-)
LOAD M (+)
WHT
RED
CAP ERROR
GND
CAP +B
CAP RVS
BLK
WHT
WHT
WHT
CN505 (RED)
CN507 (YEL)
REEL RVS
REEL +B
GND (12V)
REEL M
PM902
BRAKE PL
REEL MOTOR BOARD
IC1
M903
REEL MOTOR
CN1 (RED)
REEL M
GND (12V)
REEL +B
REEL RVS
1-613-033-
11
CN15 (BLK)
FWD 1
FWD 2
TO TU-76 BOARD CN107 (WHT)
15
M901
DRUM MOTOR
CAPSTAN MOTOR BOARD
Q1
Q2
IC1
1-608-877-
12
AUDIO HEAD
AH-5 BOARD
AU-8 BOARD CN6 (BLK)
REC/PB (Y)
REC/PB (X)
PINK
WHT
CTL HEAD (X)
CTL HEAD (Y)
WHT
BLK
1-615-086-
11
CTL HEAD
CN1 (WHT)
BLK
WHT
WHT
WHT
RED
WHT
WHT
WHT
CAP ERROR
GND (12V)
CAP +B
CAP RVS
FG (-)
FG (B)
FG (A)
FG (+)
1-4
2,3
3
1
4
5-7
5-8
5,8
6
8
5

SS-32 BOARD


9Vp-p
H
IC501 ③ REC(REF SYNC)
5Vp-p
72μsec
IC501 ㉔ REC/PB
8Vp-p
H
IC501 ⑥ CUE/REV(PB SYNC)
0.44Vp-p
3.58MHz
IC501 ㉘ REC/PB
⑬ REC CTL
30Hz
6Vp-p
⑯ PB CTL
3.2Vp-p
㊴ RF SW PULSE
4.6Vp-p
2V
IC 501 ⑬, ⑯, ㊴ PB
TRACKING - CENTER
5.2Vp-p
72μsec
IC501 ㉞ REC/PB
33.3msec
㉜ PG(A)
1.2Vp-p
2.8msec
㉝ PG(S)
1.3Vp-p
16.7msec
㊵ PG(B)
1.3Vp-p
㊴ RF SW P
4.6Vp-p
2V
IC501 REC/PB
IC504 ③ (FG1)
0.08Vp-p
IC504 ⑤ (FG2)
0.08Vp-p
IC501 ⑰ FGA
3.6Vp-p
IC501 ⑱ FG B
3.6Vp-p
5.6 msec
REC / PB
5.2Vp-p
1.2msec
IC501 ㊲ REC/PB
1.2msec
0.3Vp-p
IC502 ② PB(PB CTL)
5.2Vp-p
6MHz
IC1 (59)
5.6msec
0.08Vp-p
REC/PB
CN506 ② (FG A)
③ (FG B)
1.2msec
5.0Vp-p
IC501 ⑳ REC/PB (CP PWM)

TU-76 (TUNER, AUDIO) MP-7 (MTS RECORDER) SCHEMATIC DIAGRAMS

–Ref. No. TU-76 BOARD: 4000 series, MP-7 BOARD: 8000 series–

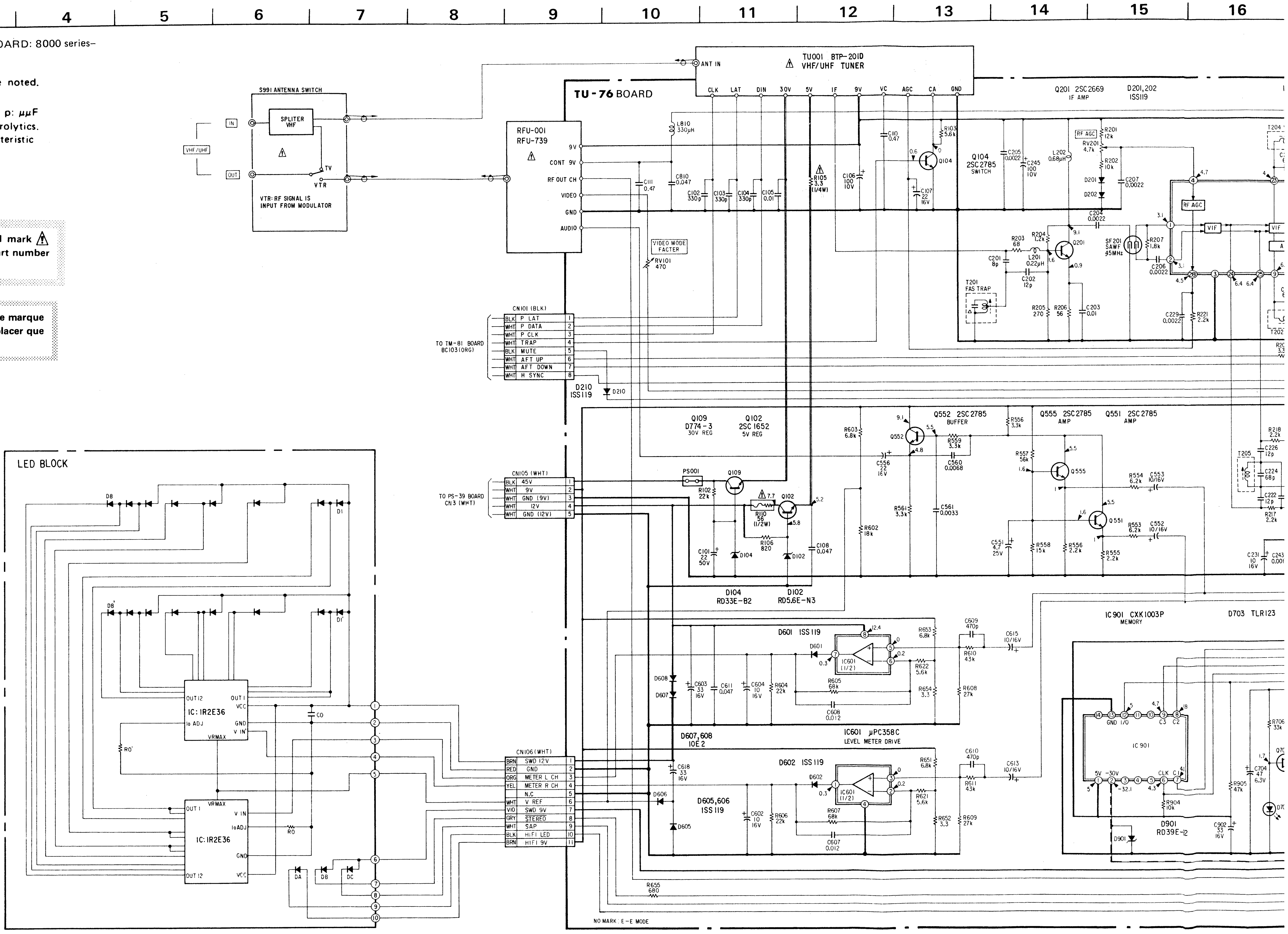
Note:

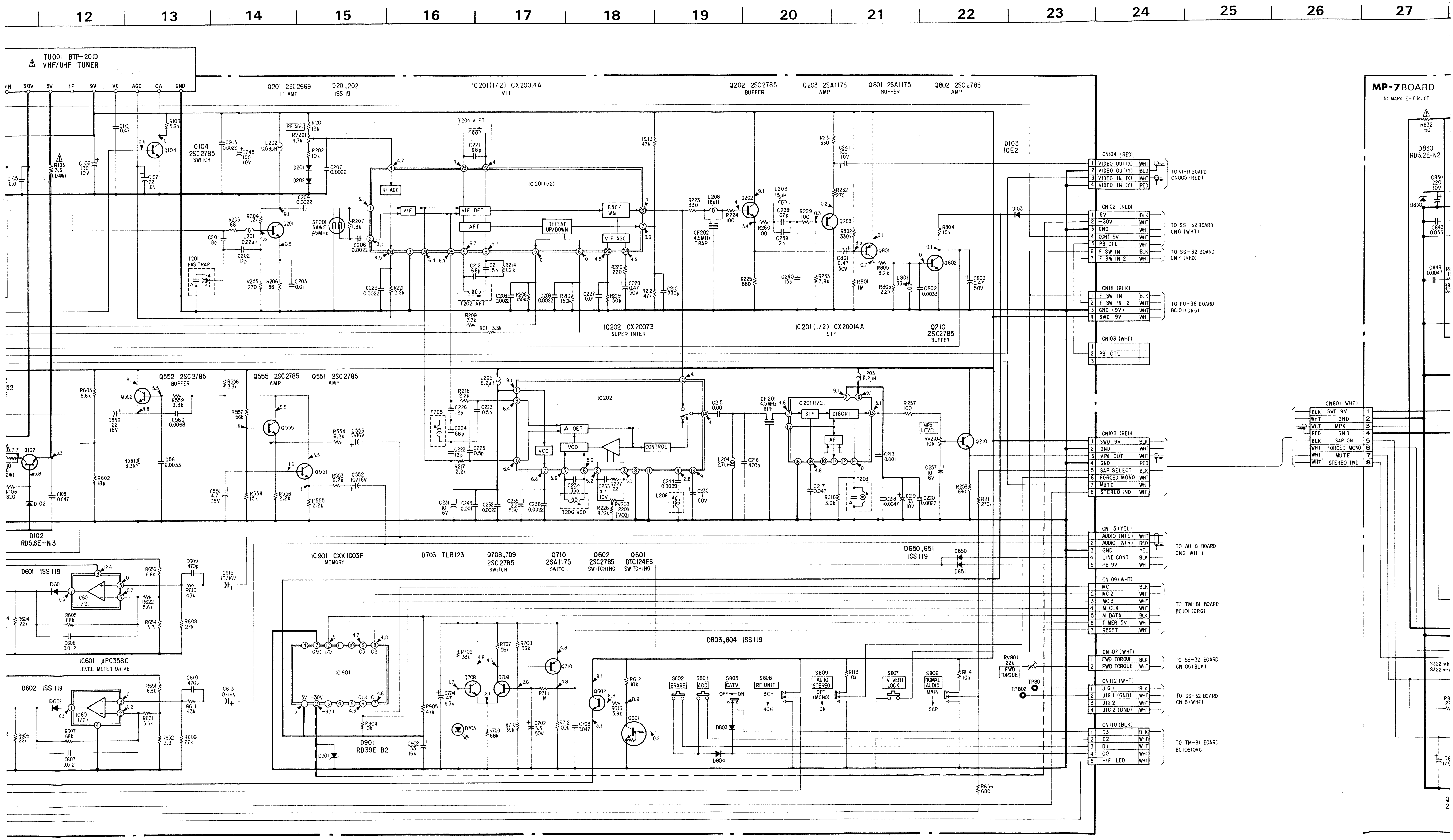
- All resistors are in ohms, 1/6W unless otherwise noted. kΩ: 1000Ω; MΩ: 1000kΩ
- All capacitors are in μF unless otherwise noted. p: μμF 50WV or less are not indicated except for electrolytics.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊞ : nonflammable resistor.
- The red lines show the main voltages.
- All voltages are dc measured with a VOM (10MΩ).

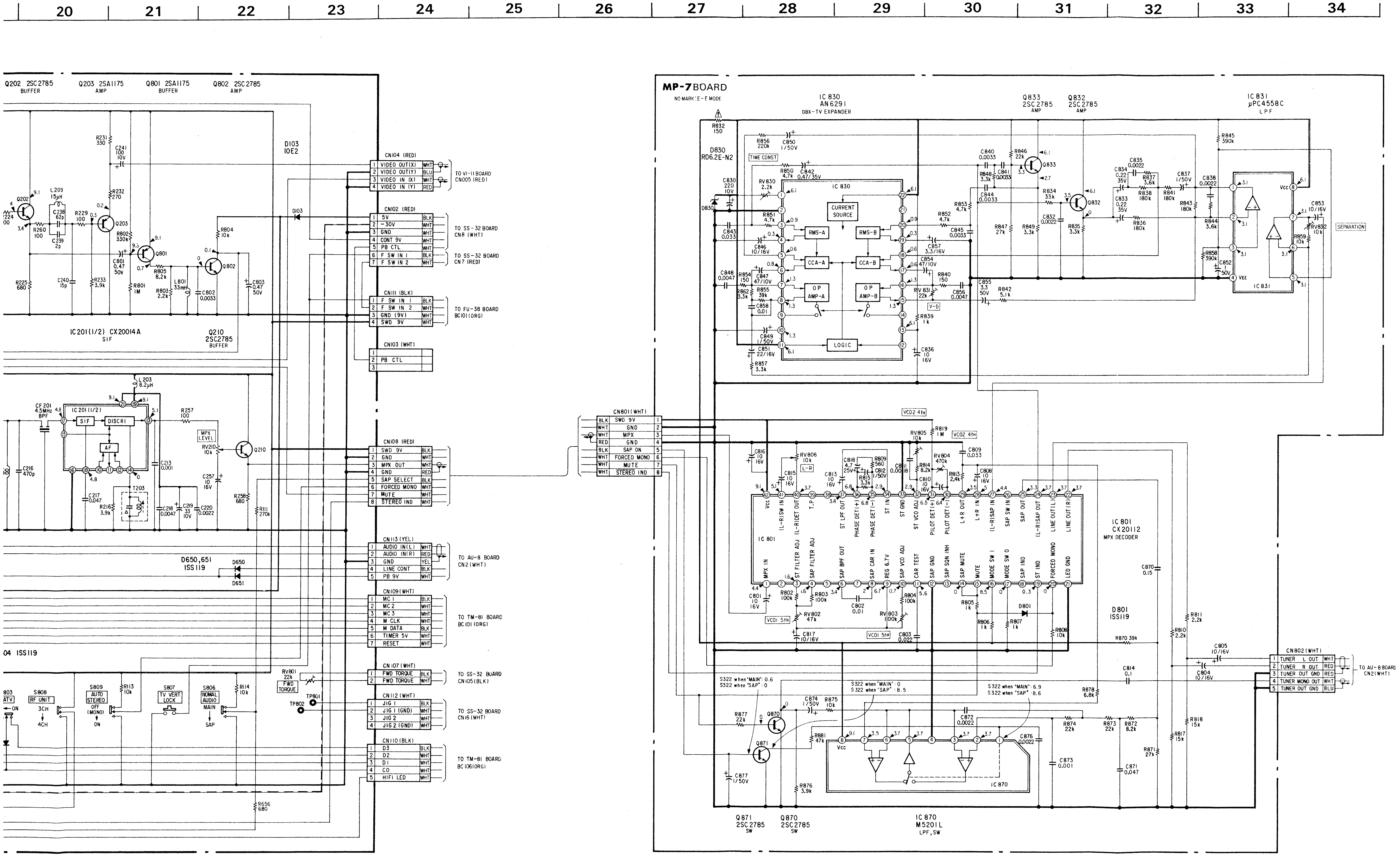
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piece portant le numéro spécifié.

```
When indicating parts by refer-
ence number, please include
the board name.
```


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
A B C D E F G H I J
S991 ANTENNA SWITCH
SPLITER VHF
IN
OUT
VHF/UHF
TV
VTR
VTR: RF SIGNAL IS INPUT FROM MODULATOR
RFU-001
RFU-739
9V
CONT 9V
RF OUT CH
VIDEO
GND
AUDIO
TU001 BTP-201D VHF/UHF TUNER
ANT IN
CLK LAT DIN 30V 5V IF 9V VC AGC CA GND
TU-76 BOARD
L810 330μH
C111 0.47
C810 0.047
C102 330p
C103 330p
C104 330p
C105 0.01
R105 3.3 (1/4W)
C106 100 10V
C110 0.47
R103 5.6k
Q104
C107 22 16V
Q104 2SC2785 SWITCH
C205 0.0022
C245 100 10V
L202 0.68μH
RF AGC
RV201 4.7k
R201 12k
R202 10k
D201
D202
C207 0.0022
Q201 2SC2669 IF AMP
D201,202 ISS119
C204 0.0022
R203 68
R204 1.2k
Q201
L201 0.22μH
C201 8p
C202 12p
SF201 SAWF 45MHz
R207 1.8k
C206 0.0022
T201 FAS TRAP
R205 270
R206 56
C203 0.01
C229 0.0022
R221 2.2k
RF AGC
VIF
T204
T202
VIDEO MODE FACTER
RV101 470
CN101 (BLK)
BLK P LAT
WHT P DATA
WHT P CLK
WHT TRAP
BLK MUTE
WHT AFT UP
WHT AFT DOWN
WHT H SYNC
TO TM-81 BOARD BC103(ORG)
D210 ISS119
D210
Q109 D774-3 30V REG
Q102 2SC1652 5V REG
Q552 2SC2785 BUFFER
Q555 2SC2785 AMP
Q551 2SC2785 AMP
R603 6.8k
Q552
R559 3.3k
C556 22 16V
C560 0.0068
R556 3.3k
R557 56k
Q555
R554 6.2k
C553 10/16V
R561 3.3k
C561 0.0033
R602 18k
Q551
R553 6.2k
C552 10/16V
C551 4.7 25V
R558 15k
R556 2.2k
R555 2.2k
R218 2.2k
C226 12p
T205
C224 68p
C222 12p
R217 2.2k
C231 10 16V
CN105 (WHT)
BLK 45V
WHT 9V
WHT GND (9V)
WHT 12V
WHT GND (12V)
TO PS-39 BOARD CN3 (WHT)
PS001
R102 22k
Q109
Q102
R110 56 (1/2W)
R106 820
C101 22 50V
D104
D102
C108 0.047
D104 RD33E-B2
D102 RD5.6E-N3
IC901 CXK1003P MEMORY
D703 TLR123
D601 ISS119
D601
IC601 (1/2)
R653 6.8k
C609 470p
C615 10/16V
R610 43k
R622 5.6k
R605 68k
R654 3.3
R608 27k
C608 0.012
D608
D607
C603 33 16V
C611 0.047
C604 10 16V
R604 22k
D607,608 10E2
IC601 μPC358C LEVEL METER DRIVE
D602 ISS119
D602
IC601 (1/2)
R651 6.8k
C610 470p
C613 10/16V
R611 43k
R621 5.6k
R607 68k
C607 0.012
R652 3.3
R609 27k
C618 33 16V
D606
D605
D605,606 ISS119
C602 10 16V
R606 22k
IC 901
GND I/O
C3 C2
5V -30V
CLK C1
R904 10k
R905 47k
R706 33k
C704 47 6.3V
D901 RD39E-12
D901
C902 33 16V
CN106 (WHT)
BRN SWD 12V
RED GND
ORG METER L CH
YEL METER R CH
N.C
WHT V REF
VIO SWD 9V
GRY STEREO
WHT SAP
BLK HiFi LED
BRN HiFi 9V
R655 680
NO MARK: E-E MODE
LED BLOCK
D8
D1
D8'
D1'
IC: IR2E36
OUT 12
OUT 1
VCC
Io ADJ
GND
V IN'
VRMAX
C0
R0'
OUT 1
V IN
IoADJ
R0
IC: IR2E36
GND
OUT 12
VCC
DA
DB
DC


12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
TU001 BTP-201D
VHF/UHF TUNER
30V 5V IF 9V VC AGC CA GND
Q201 2SC2669 IF AMP
D201,202 1SS119
IC201(1/2) CX20014A VIF
Q202 2SC2785 BUFFER
Q203 2SA1175 AMP
Q801 2SA1175 BUFFER
Q802 2SC2785 AMP
Q104 2SC2785 SWITCH
T204 VIFT
IC201(1/2)
RF AGC
VIF
VIF DET
AFT
DEFEAT UP/DOWN
BNC/WNL
VIF AGC
SF201 SAWF 45MHz
T201 FAS TRAP
T202 AFT
CF202 4.5MHz TRAP
D103 10E2
IC202 CX20073 SUPER INTER
IC201(1/2) CX20014A SIF
Q210 2SC2785 BUFFER
Q552 2SC2785 BUFFER
Q555 2SC2785 AMP
Q551 2SC2785 AMP
IC202
φ DET
VCC
VCO
CONTROL
T205
T206 VCO
CF201 4.5MHz BPF
SIF
DISCRI
AF
T203
MPX LEVEL RV210 10k
D102 RD5.6E-N3
D601 1SS119
IC601 (1/2)
IC601 μPC358C LEVEL METER DRIVE
D602 1SS119
IC901 CXK1003P MEMORY
D703 TLR123
Q708,709 2SC2785 SWITCH
Q710 2SA1175 SWITCH
Q602 2SC2785 SWITCHING
Q601 DTC124ES SWITCHING
D650,651 1SS119
IC901
GND I/O C3 C2
5V -30V CLK C1
D901 RD39E-B2
D803,804 1SS119
S802 ERASE
S801 ADD
S803 CATV OFF ON
S808 RF UNIT 3CH 4CH
S809 AUTO STEREO OFF (MONO) ON
S807 TV VERT LOCK
S806 NOMAL AUDIO MAIN SAP
RV801 22k FWD TORQUE
TP801
TP802
CN104 (RED)
1 VIDEO OUT(X) WHT
2 VIDEO OUT(Y) BLU
3 VIDEO IN (X) WHT
4 VIDEO IN (Y) RED
TO VI-11 BOARD CN005 (RED)
CN102 (RED)
1 5V BLK
2 -30V WHT
3 GND WHT
4 CONT 9V WHT
5 PB CTL WHT
6 F SW IN 1 BLK
7 F SW IN 2 WHT
TO SS-32 BOARD CN8 (WHT)
TO SS-32 BOARD CN7 (RED)
CN111 (BLK)
1 F SW IN 1 BLK
2 F SW IN 2 WHT
3 GND (9V) WHT
4 SWD 9V WHT
TO FU-38 BOARD BC101 (ORG)
CN103 (WHT)
2 PB CTL
CN108 (RED)
1 SWD 9V BLK
2 GND WHT
3 MPX OUT WHT
4 GND RED
5 SAP SELECT BLK
6 FORCED MONO WHT
7 MUTE WHT
8 STEREO IND WHT
CN801 (WHT)
BLK SWD 9V 1
WHT GND 2
WHT MPX 3
RED GND 4
BLK SAP ON 5
WHT FORCED MONO 6
WHT MUTE 7
WHT STEREO IND 8
CN113 (YEL)
1 AUDIO IN(L) WHT
2 AUDIO IN(R) RED
3 GND YEL
4 LINE CONT BLK
5 PB 9V WHT
TO AU-8 BOARD CN2 (WHT)
CN109 (WHT)
1 MC1 BLK
2 MC2 WHT
3 MC3 WHT
4 M CLK WHT
5 M DATA BLK
6 TIMER 5V WHT
7 RESET WHT
TO TM-81 BOARD BC101 (ORG)
CN107 (WHT)
1 FWD TORQUE BLK
2 FWD TORQUE WHT
TO SS-32 BOARD CN105 (BLK)
CN112 (WHT)
1 JIG 1 BLK
2 JIG 1 (GND) WHT
3 JIG 2 WHT
4 JIG 2 (GND) WHT
TO SS-32 BOARD CN16 (WHT)
CN110 (BLK)
1 D3 BLK
2 D2 WHT
3 D1 WHT
4 C0 WHT
5 HIFI LED WHT
TO TM-81 BOARD BC106 (ORG)
MP-7 BOARD
NO MARK : E-E MODE
R832 150
D830 RD6.2E-N2


20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
Q202 2SC2785 BUFFER
Q203 2SA1175 AMP
Q801 2SA1175 BUFFER
Q802 2SC2785 AMP
D103 10E2
IC201(1/2) CX20014A SIF
Q210 2SC2785 BUFFER
CF201 4.5MHz BPF
SIF
DISCRI
AF
MPX LEVEL
D650,651 1SS119
CN104 (RED)
VIDEO OUT(X)
VIDEO OUT(Y)
VIDEO IN (X)
VIDEO IN (Y)
TO VI-11 BOARD CN005 (RED)
CN102 (RED)
5V
-30V
GND
CONT 9V
PB CTL
F SW IN 1
F SW IN 2
TO SS-32 BOARD CN8 (WHT)
TO SS-32 BOARD CN7 (RED)
CN111 (BLK)
F SW IN 1
F SW IN 2
GND (9V)
SWD 9V
TO FU-38 BOARD BC101 (ORG)
CN103 (WHT)
PB CTL
CN108 (RED)
SWD 9V
GND
MPX OUT
GND
SAP SELECT
FORCED MONO
MUTE
STEREO IND
CN113 (YEL)
AUDIO IN(L)
AUDIO IN(R)
GND
LINE CONT
PB 9V
TO AU-8 BOARD CN2 (WHT)
CN109 (WHT)
MC 1
MC 2
MC 3
M CLK
M DATA
TIMER 5V
RESET
TO TM-81 BOARD BC101 (ORG)
CN107 (WHT)
FWD TORQUE
FWD TORQUE
TO SS-32 BOARD CN105 (BLK)
CN112 (WHT)
JIG 1
JIG 1 (GND)
JIG 2
JIG 2 (GND)
TO SS-32 BOARD CN16 (WHT)
CN110 (BLK)
D3
D2
D1
C0
HIFI LED
TO TM-81 BOARD BC106 (ORG)
RV801 22k FWD TORQUE
TP801
TP802
S808 RF UNIT 3CH 4CH
S809 AUTO STEREO OFF (MONO) ON
S807 TV VERT LOCK
S806 NOMAL AUDIO MAIN SAP
CN801 (WHT)
SWD 9V
GND
MPX
GND
SAP ON
FORCED MONO
MUTE
STEREO IND
MP-7 BOARD
NO MARK : E-E MODE
IC830 AN6291 DBX-TV EXPANDER
D830 RD6.2E-N2
TIME CONST
CURRENT SOURCE
RMS-A
RMS-B
CCA-A
CCA-B
OP AMP-A
OP AMP-B
LOGIC
Q833 2SC2785 AMP
Q832 2SC2785 AMP
IC831 μPC4558C LPF
SEPARATION
IC801 CX20112 MPX DECODER
Vcc
(L-R)SW IN
(L-R)DET OUT
T.P
ST LPF OUT
PHASE DET(+)
PHASE DET(-)
ST IN
ST GND
ST VCO ADJ
PILOT DET(+)
PILOT DET(-)
L+R OUT
L+R IN
(L-R)SAP IN
SAP SW IN
SAP OUT
(L-R)SAP OUT
LINE OUT(L)
LINE OUT(R)
MPX IN
ST FILTER ADJ
SAP FILTER ADJ
SAP BPF OUT
SAP CAR IN
REG 6.7V
SAP VCO ADJ
CAR TEST
SAP GND
SAP SON INH
SAP MUTE
MUTE
MODE SW 1
MODE SW 0
SAP IND
ST IND
FORCED MONO
LED GND
VCO2 4fH
VCO1 5fH
L-R
V-D
D801 1SS119
CN802 (WHT)
TUNER L OUT
TUNER R OUT
TUNER OUT GND
TUNER MONO OUT
TUNER OUT GND
TO AU-8 BOARD CN2 (WHT)
S322 when "MAIN": 0.6
S322 when "SAP": 0
S322 when "MAIN": 0
S322 when "SAP": 8.5
S322 when "MAIN": 6.9
S322 when "SAP": 8.6
IC870
Q871 2SC2785 SW
Q870 2SC2785 SW
IC870 M5201L LPF, SW

TU-76 (TUNER, AUDIO) MP-7 (MTS RECORDER) PRINTED WIRING BOARDS

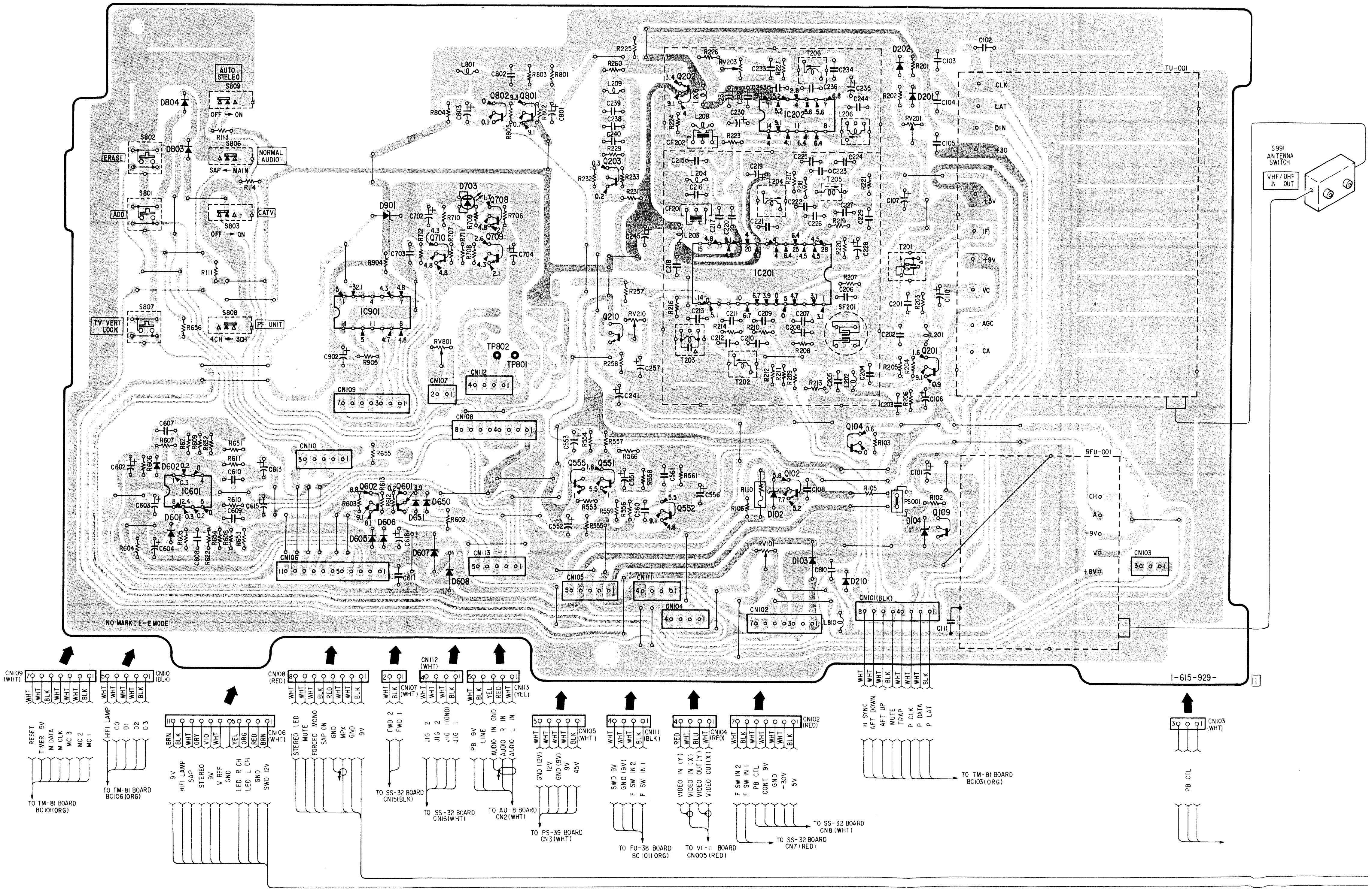
- o— : Indicates a leadwire mounted on the component side.
- •— : Indicates a leadwire mounted on the printed side.
- ▨ soldering side.
- ░ B + pattern

- Digital transistor (TU-76: Q601) transistor with resistors. Refer to the TU-76 board schematic diagram for digital transistor.

—Ref. No. TU-76 BOARD: 4000 series, MP-7 BOARD: 8 000 series—

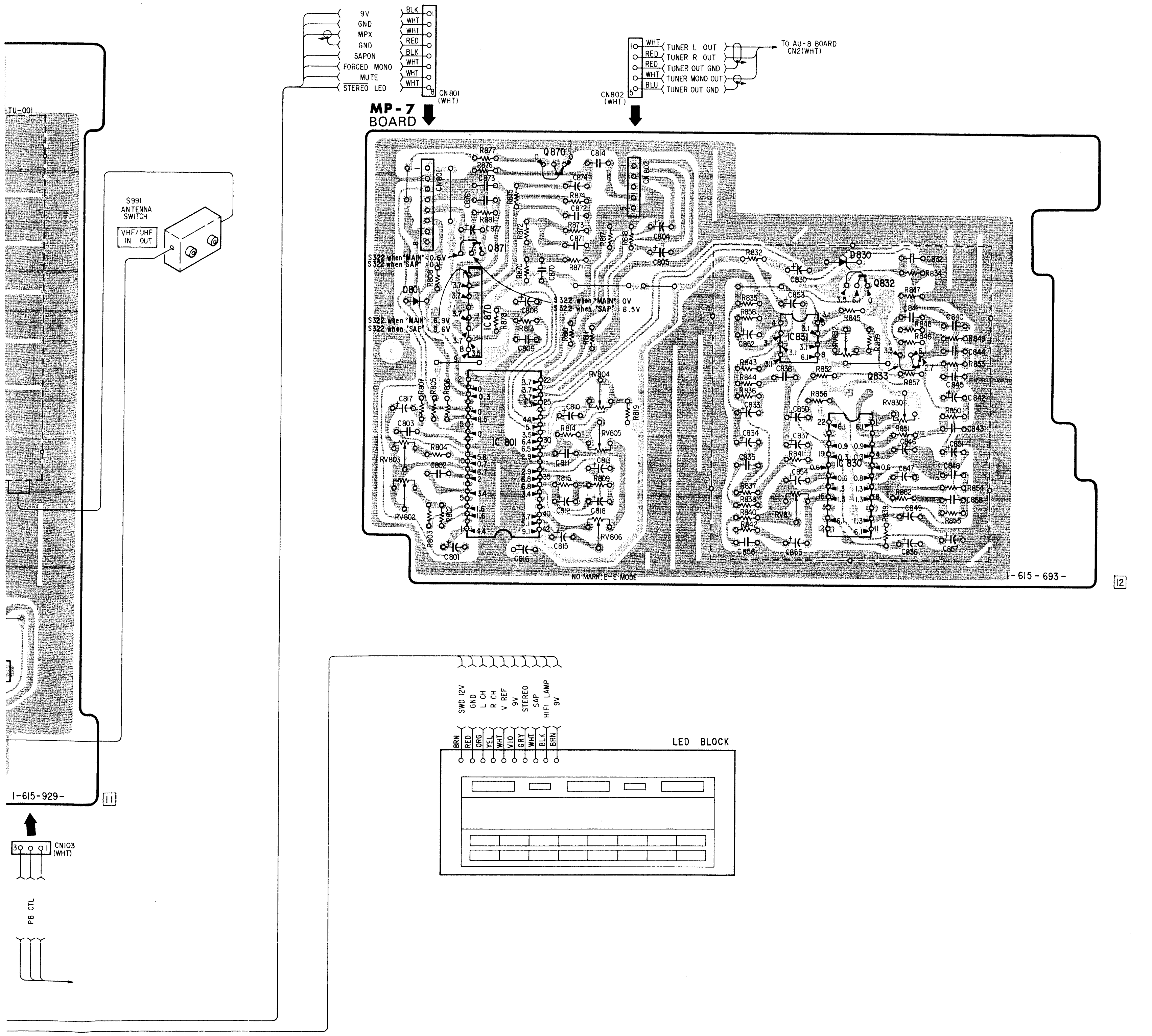
	1	2	3	4	5	6	7	8	9	10	11	12	
Q · IC		IC601		IC901 602,601	802 801 708 709 710	203 210 555,551	202 552 IC201	IC202 102 104	201 109				Q · IC
D		804 803 602 601		901 605,606 651,650	703 607,608			102 103 210	202 201 104				D
ADJ · TP					RV801 TP802,TP801	RV210	RV203	RV101	RV201				ADJ · TP

TU-76 BOARD


AUTO STEREO
S809
OFF ON
S802
ERASE
D804
D803
S806
NORMAL AUDIO
SAP MAIN
S801
ADD
S803
CATV
OFF ON
S807
TV VERT LOCK
S808
PF UNIT
4CH 3CH
D901
IC901
D703
Q708
Q709
Q710
Q801
Q802
L801
RV801
TP802
TP801
CN107
CN109
CN112
CN108
CN110
IC601
Q601
Q602
D601
D602
D605
D606
D607
D608
D650
D651
CN106
CN113
CN105
CN111
CN104
CN102
CN101(BLK)
Q551
Q552
Q555
Q102
Q104
Q109
D102
D103
D104
D210
RV101
PS001
L810
C111
Q201
Q202
Q203
Q210
RV201
RV203
RV210
IC201
IC202
D201
D202
T201
T202
T203
T204
T205
T206
SF201
CF201
CF202
TU-001
CLK
LAT
DIN
+30
+9V
IF
+9V
VC
AGC
CA
RFU-001
CH
A
+9V
V0
+BV
CN103
S991 ANTENNA SWITCH
VHF/UHF IN OUT
NO MARK : E-E MODE
1-615-929-
1
CN109 (WHT)
WHT WHT BLK WHT WHT WHT BLK
RESET
TIMER 5V
M DATA
M CLK
MC 3
MC 2
MC 1
TO TM-81 BOARD BC101(ORG)
CN110 (BLK)
WHT WHT WHT WHT BLK
HIFI LAMP
C0
D1
D2
D3
TO TM-81 BOARD BC106(ORG)
CN106 (WHT)
BRN BLK WHT GRY VIO WHT YEL ORG RED BRN
9V
HIFI LAMP
SAP
STEREO
9V
V REF
GND
LED R CH
LED L CH
GND
SWD 12V
CN108 (RED)
WHT WHT WHT BLK RED WHT WHT BLK
STEREO LED
MUTE
FORCED MONO
SAP ON
GND
MPX
GND
9V
CN107 (WHT)
WHT BLK
FWD 2
FWD 1
TO SS-32 BOARD CN15(BLK)
CN112 (WHT)
WHT WHT WHT BLK
JIG 2
JIG 2
JIG 1(GND)
JIG 1
TO SS-32 BOARD CN16(WHT)
CN113 (YEL)
WHT BLK YEL RED WHT
PB 9V
LINE
AUDIO IN GND
AUDIO R IN
AUDIO L IN
TO AU-8 BOARD CN2(WHT)
CN105 (WHT)
WHT WHT WHT WHT BLK
GND (12V)
12V
GND (9V)
9V
45V
TO PS-39 BOARD CN3(WHT)
CN111 (BLK)
WHT WHT WHT BLK
SWD 9V
GND (9V)
F SW IN 2
F SW IN 1
TO FU-38 BOARD BC 101(ORG)
CN104 (RED)
RED WHT BLU WHT
VIDEO IN (Y)
VIDEO IN (X)
VIDEO OUT(Y)
VIDEO OUT(X)
TO VI-11 BOARD CN005 (RED)
CN102 (RED)
WHT BLK WHT WHT WHT WHT BLK
F SW IN 2
F SW IN 1
PB CTL
CONT 9V
GND
-30V
5V
TO SS-32 BOARD CN8 (WHT)
TO SS-32 BOARD CN7 (RED)
WHT WHT WHT BLK WHT WHT WHT BLK
H SYNC
AFT DOWN
AFT UP
MUTE
TRAP
P CLK
P DATA
P LAT
TO TM-81 BOARD BC103(ORG)
CN103 (WHT)
PB CTL

Q · IC	
D	
ADJ · TP	

	12	13	14	15	16	17	18	19	20	
Q , IC				871 IC870 IC801	870	IC831	832 IC830 833			Q , IC
D			801				830			D
ADJ			RV803 RV802		RV804 RV805 RV806	RV831	RV832 RV830			ADJ


9V
GND
MPX
GND
SAPON
FORCED MONO
MUTE
STEREO LED
BLK
WHT
WHT
RED
BLK
WHT
WHT
WHT
CN801 (WHT)
WHT
RED
RED
WHT
BLU
TUNER L OUT
TUNER R OUT
TUNER OUT GND
TUNER MONO OUT
TUNER OUT GND
TO AU-8 BOARD CN2(WHT)
CN802 (WHT)
MP-7 BOARD
TU-001
S991 ANTENNA SWITCH
VHF/UHF IN OUT
Q870
Q871
IC870
IC801
IC831
IC830
Q832
Q833
D801
D830
RV802
RV803
RV804
RV805
RV806
RV830
RV831
RV832
S322 when "MAIN" : 0.6V
S322 when "SAP" : 0
S322 when "MAIN" : 6.9V
S322 when "SAP" : 6.6V
S322 when "MAIN" : 0V
S322 when "SAP" : 8.5V
NO MARK : E MODE
1-615-693-
12
1-615-929-
11
CN103 (WHT)
PB CTL
SWD 12V
GND
L CH
R CH
V REF
9V
STEREO
SAP
HIFI LAMP
9V
BRN
RED
ORG
YEL
WHT
VIO
GRY
WHT
BLK
BRN
LED BLOCK

AU-8 (AUDIO PROCESS) SCHEMATIC DIAGRAM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

—Ref. No. AU-8 BOARD: 3000 series—

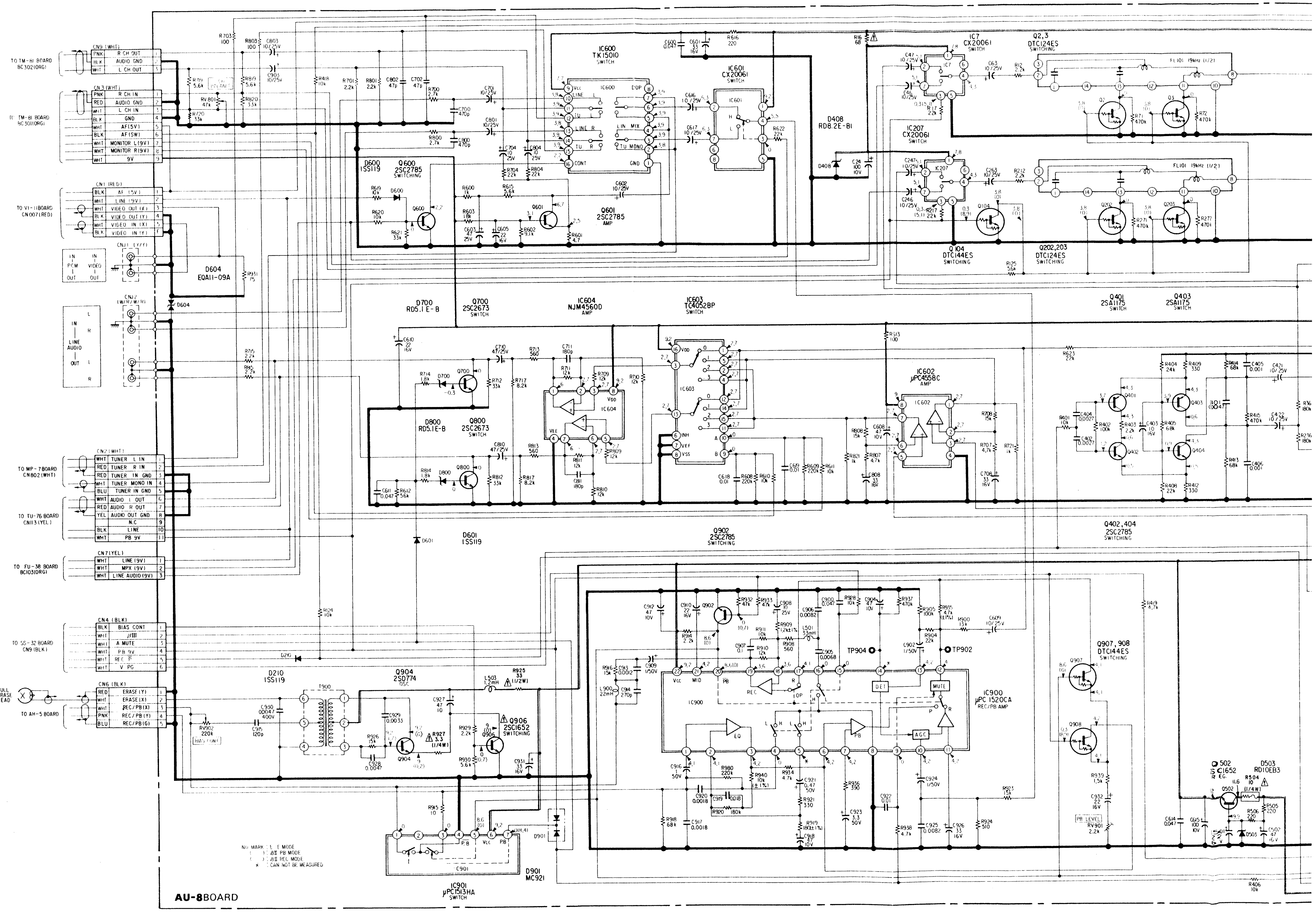
Note:

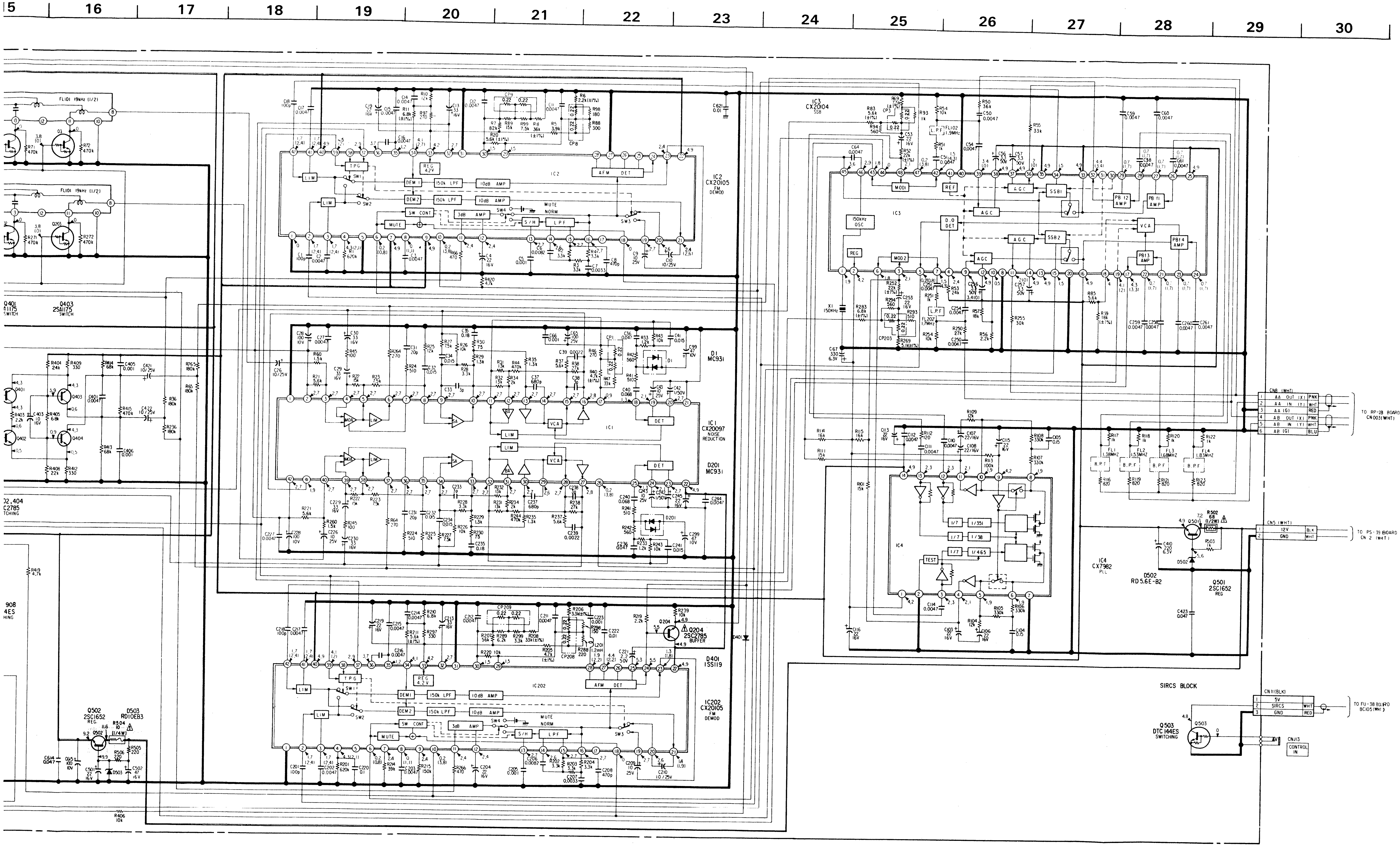
- All resistors are in ohms, 1/6W unless otherwise noted. kΩ: 1000Ω; MΩ: 1000kΩ
- All capacitors are in μF unless otherwise noted. p: μμF 50WV or less are not indicated except for electrolytics.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▣ : nonflammable resistor.
- ▭ : fusible resistor.
- The red lines show the main voltages.
- All voltages are dc measured with a VOM (10MΩ).

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piece portant le numéro spécifié.

When indicating parts by reference number, please include the board name.


CN9 (WHT)
R CH OUT
AUDIO GND
L CH OUT
TO TM-1 BOARD
CN3 (WHT)
R CH IN
AUDIO GND
L CH IN
GND
AF(5V)
AF(SW)
MONITOR L(9V)
MONITOR R(9V)
9V
CN1 (RED)
TO VI-11 BOARD CN007(RED)
AF (5V)
LINE (9V)
VIDEO OUT (X)
VIDEO OUT (Y)
VIDEO IN (X)
VIDEO IN (Y)
IN PCM OUT
IN VIDEO OUT
LINE AUDIO
IC600 TK15010 SWITCH
IC601 CX20061 SWITCH
IC7 CX20061 SWITCH
Q2,3 DTC124ES SWITCHING
FL101
IC207 CX20061 SWITCH
D408 RD8.2E-B1
D600 1SS119
Q600 2SC2785 SWITCHING
Q601 2SC2785 AMP
Q104 DTC144ES SWITCHING
Q202,203 DTC124ES SWITCHING
D604 EQA11-09A
D700 RD5.1E-B
Q700 2SC2673 SWITCH
IC604 NJM4560D AMP
IC603 TC4052BP SWITCH
IC602 μPC4558C AMP
Q401 2SA1175 SWITCH
Q403 2SA1175 SWITCH
D800 RD5.1E-B
Q800 2SC2673 SWITCH
D601 1SS119
Q902 2SC2785 SWITCHING
Q402,404 2SC2785 SWITCHING
CN2 (WHT)
TO MP-7 BOARD CN802(WHT)
TUNER L IN
TUNER R IN
TUNER IN GND
TUNER MONO IN
TUNER IN GND
AUDIO 1 OUT
AUDIO R OUT
AUDIO OUT GND
N.C
LINE
PB 9V
TO TU-76 BOARD CN113(YEL)
CN7 (YEL)
TO FU-38 BOARD BC103(ORG)
LINE (9V)
MPX (9V)
LINE AUDIO (9V)
CN4 (BLK)
TO SS-32 BOARD CN9 (BLK)
BIAS CONT
A MUTE
PB 9V
V PG
CN6 (BLK)
TO AH-5 BOARD
ERASE (Y)
ERASE (X)
REC/PB (X)
REC/PB (Y)
REC/PB (G)
D210 1SS119
T900
Q904 2SD774 OSC
L503 1.2mH
Q906 2SC1652 SWITCHING
IC900 μPC1520CA REC/PB AMP
TP904
TP902
Q907, 908 DTC144ES SWITCHING
PB LEVEL RV901
Q502 2SC1652
D503 RD10EB3
IC901 μPC1513HA SWITCH
D901 MC921
NO MARK: E-E MODE
( ): PB MODE
( ): REC MODE
*: CAN NOT BE MEASURED
AU-8BOARD


15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
FL101 19kHz (1/2)
Q401 ..1175 SWITCH
Q403 2SA1175 SWITCH
..2,404 ..C2785 ..TCHING
..908 ..4ES ..HING
Q502 2SC1652 REG.
D503 RD10EB3
R504 10 (1/4W)
IC2 CX20105 FM DEMOD
IC1 CX20097 NOISE REDUCTION
D1 MC931
D201 MC931
IC202 CX20105 FM DEMOD
Q204 2SC2785 BUFFER
D401 1SS119
IC3 CX20104 SSB
IC4 CX7982 PLL
D502 RD5.6E-B2
Q501 2SC1652 REG
R502 68 (1/2W)
SIRCS BLOCK
Q503 DTC144ES SWITCHING
CN8 (WHT)
AA OUT (X) PNK
AA IN (Y) WHT
AA (G) RED
AB OUT (X) PNK
AB IN (Y) WHT
AB (G) BLU
TO RP-28 BOARD CN003 (WHT)
CN5 (WHT)
12V BLK
GND WHT
TO PS-39 BOARD CN 2 (WHT)
CN11 (BLK)
5V
SIRCS WHT
GND RED
TO FU-38 BOARD BC105 (WHT)
CNJ13 CONTROL IN
LIM
TPG
REG 4.2V
DEM1
DEM2
150k LPF
10dB AMP
AFM DET
SW CONT
MUTE
3dB AMP
S/H
LPF
MUTE NORM
SW1
SW2
SW3
SW4
LIM
VCA
DET
MODI
REF
AGC
SSB1
SSB2
PB12 AMP
PB11 AMP
PB14 AMP
PB13 AMP
150kHz OSC
D.O DET
MOD2
L.P.F
FL102 1.9MHz
FL202 1.7MHz
X1 150kHz
B.P.F
FL1 1.38MHz
FL2 1.53MHz
FL3 1.68MHz
FL4 1.83MHz
1/7
1/351
1/38
1/465
TEST
CP8
CP9
CP203
CP208
CP209

AU-8 (AUDIO PROCESS) PRINTED WIRING BOARD

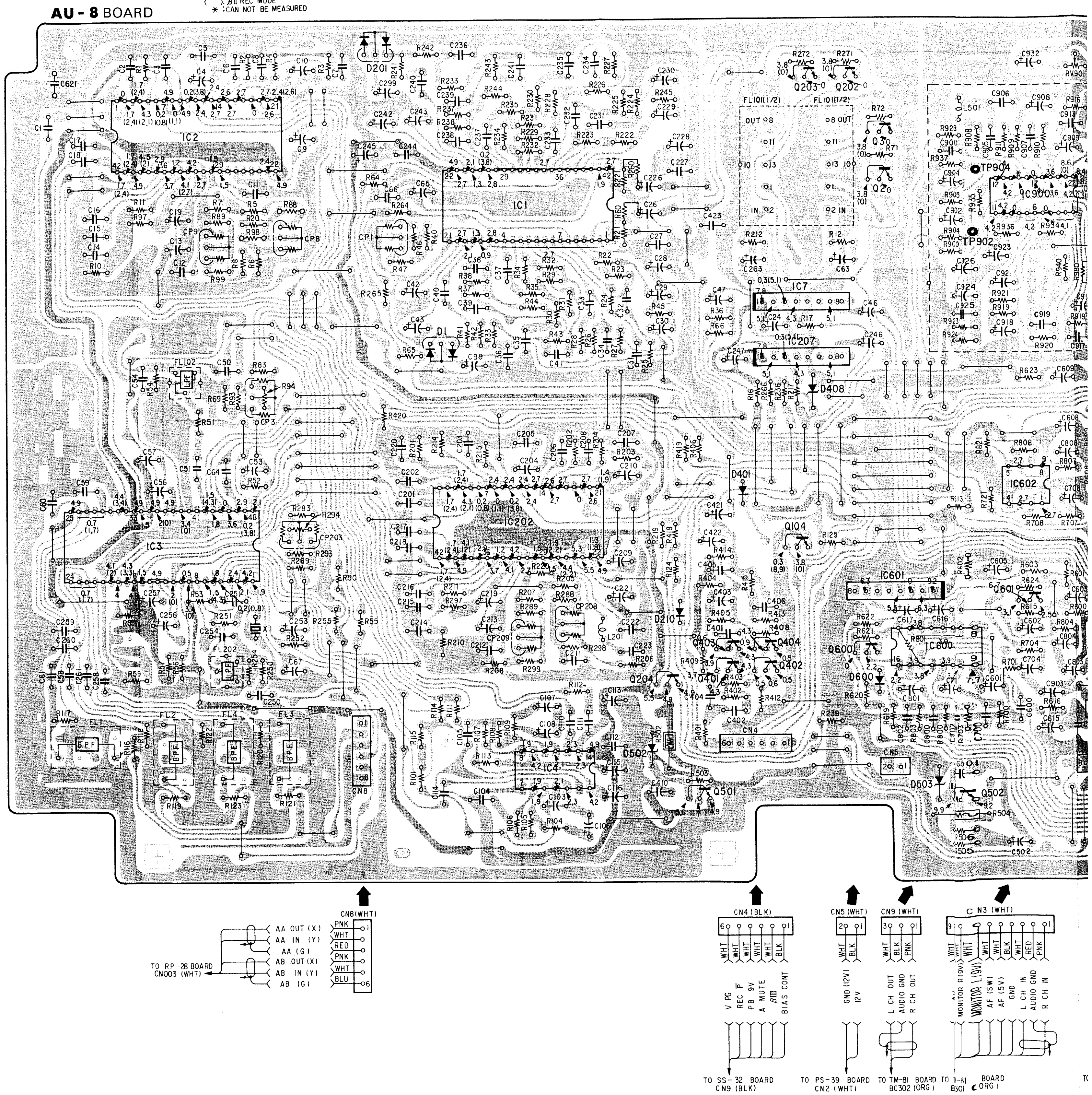
- o— : Indicates a leadwire mounted on the component side.
- •— : Indicates a leadwire mounted on the printed side.
- ▨ soldering side.
- ▨ B + pattern
- Digital transistor (AU-8: Q002, 003, 104, 202, 203, 503, 907, 908) transistor with resistors.
Refer to the AU-8 board schematic diagram for digital transistor.

—Ref. No. AU-8 BOARD: 3000 series—

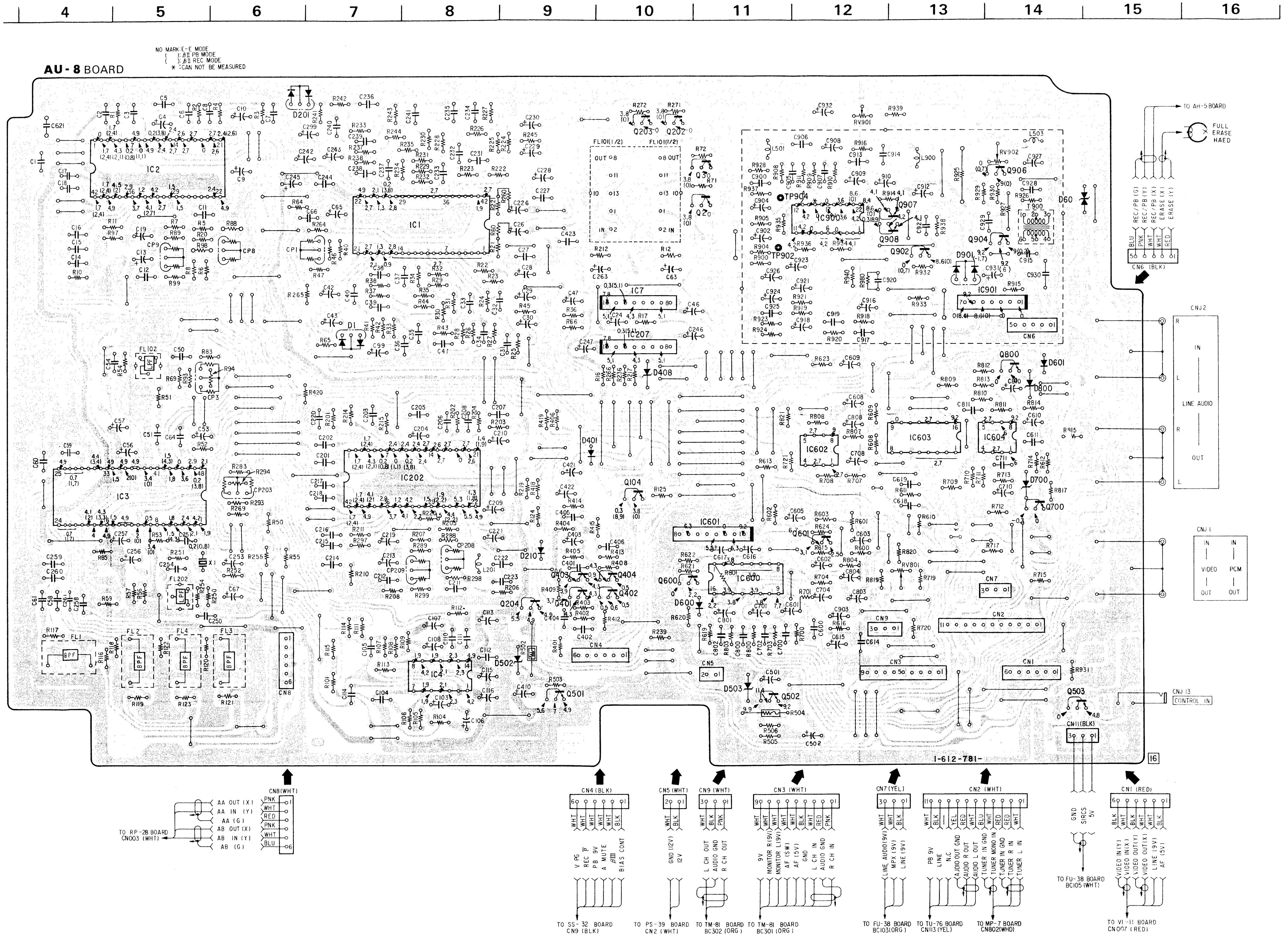
	Q · IC	D	ADJ · TP
A		201	RV901
B	203 202 IC2 3 906 2 IC1	604	RV902 TP904
C	IC900 907 908 904 902 IC7 IC901	901	TP902
D	IC207 800	1 601 408 800	
E	IC603 IC604 IC602 IC202 104 IC3 700	401 700	
F	IC601 601 403, 404 600 IC600 401, 402	210	RV801
G	204 IC4	600 502	
H	501 502 503	503	

NO MARK: E-E MODE
( ): βII PB MODE
( ): βII REC MODE
✱ : CAN NOT BE MEASURED

AU - 8 BOARD


1 2 3 4 5 6 7 8 9 10 11 12
A B C D E F G H I
IC1
IC2
IC3
IC4
IC7
IC207
IC202
IC601
IC600
IC602
IC900
CN8 (WHT)
PNK
WHT
RED
PNK
WHT
BLU
AA OUT (X)
AA IN (Y)
AA (G)
AB OUT (X)
AB IN (Y)
AB (G)
TO RP-28 BOARD CN003 (WHT)
CN4 (BLK)
WHT WHT WHT WHT WHT BLK
V PG
REC P̄
PB 9V
A MUTE
βIII
BIAS CONT
TO SS-32 BOARD CN9 (BLK)
CN5 (WHT)
WHT BLK
GND (12V)
12V
TO PS-39 BOARD CN2 (WHT)
CN9 (WHT)
WHT BLK PNK
L CH OUT
AUDIO GND
R CH OUT
TO TM-81 BOARD BC302 (ORG)
CN3 (WHT)
WHT WHT WHT WHT WHT BLK WHT RED PNK
MONITOR R (9V)
MONITOR L (9V)
AF (SW)
AF (5V)
GND
L CH IN
AUDIO GND
R CH IN
TO TM-81 BOARD B301 (ORG)

ING BOARD


4 5 6 7 8 9 10 11 12 13 14 15 16
NO MARK : E-E MODE
( ) : βII PB MODE
( ) : βII REC MODE
* : CAN NOT BE MEASURED
AU-8 BOARD
IC1
IC2
IC3
IC4
IC7
IC202
IC207
IC601
IC602
IC603
IC604
IC900
IC901
FL101(1/2)
FL101(1/2)
TP904
TP902
D201
D60
Q906
Q907
Q908
Q902
Q904
D901
T900
Q800
D601
D800
Q700
D700
Q104
Q403
Q404
Q401
Q402
Q204
D210
D401
D408
Q600
Q601
D600
CN1
CN2
CN3
CN4
CN5
CN6
CN6 (BLK)
CN7
CN8
CN9
CN11 (BLK)
Q501
Q502
Q503
D502
D503
1-612-781-
TO AH-5 BOARD
FULL ERASE HAED
REC/PB (G)
REC/PB (Y)
REC/PB (X)
ERASE (X)
ERASE (Y)
BLU PNK WHT WHT RED
CNJ2
IN
OUT
LINE AUDIO
R
L
CNJ1
IN
VIDEO
PCM
OUT
CNJ13
CONTROL IN
CN8(WHT)
AA OUT (X)
AA IN (Y)
AA (G)
AB OUT (X)
AB IN (Y)
AB (G)
PNK WHT RED PNK WHT BLU
TO RP-28 BOARD CN003 (WHT)
CN4 (BLK)
V PG
REC 'P'
PB 9V
A MUTE
βIII
BIAS CONT
TO SS-32 BOARD CN9 (BLK)
CN5 (WHT)
GND (12V)
12V
TO PS-39 BOARD CN2 (WHT)
CN9 (WHT)
L CH OUT
AUDIO GND
R CH OUT
TO TM-81 BOARD BC302 (ORG)
CN3 (WHT)
9V
MONITOR R (9V)
MONITOR L (9V)
AF (SW)
AF (5V)
GND
L CH IN
AUDIO GND
R CH IN
TO TM-81 BOARD BC301 (ORG)
CN7 (YEL)
LINE AUDIO (9V)
MPX (9V)
LINE (9V)
TO FU-38 BOARD BC103 (ORG)
CN2 (WHT)
PB 9V
LINE
N.C
AUDIO OUT GND
AUDIO R OUT
AUDIO L OUT
TUNER IN GND
TUNER MONO IN
TUNER IN GND
TUNER R IN
TUNER L IN
TO TU-76 BOARD CN113 (YEL)
TO MP-7 BOARD CN802 (WHD)
GND
SIRCS
5V
TO FU-38 BOARD BC105 (WHT)
CN1 (RED)
VIDEO IN (Y)
VIDEO IN (X)
VIDEO OUT (Y)
VIDEO OUT (X)
LINE (9V)
AF (5V)
TO VI-11 BOARD CN007 (RED)

TM-81 (TIMER) FU-38 (CASSETTE CONTROL SWITCH) SCHEMATIC DIAGRAMS

—Ref. No. TM-81 BOARD: 7000 series, FU-38 BOARD: 5000 series—

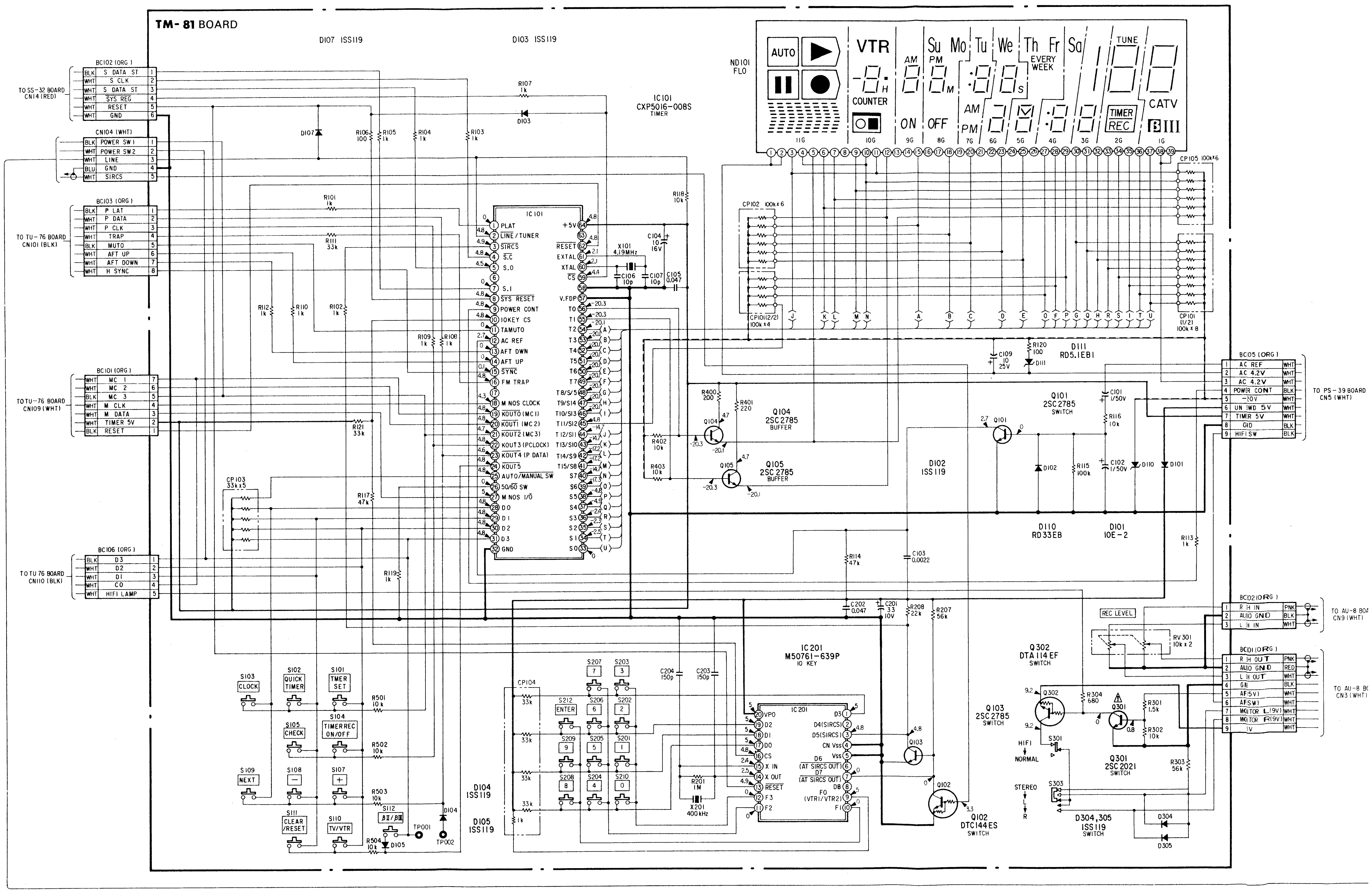
Note:

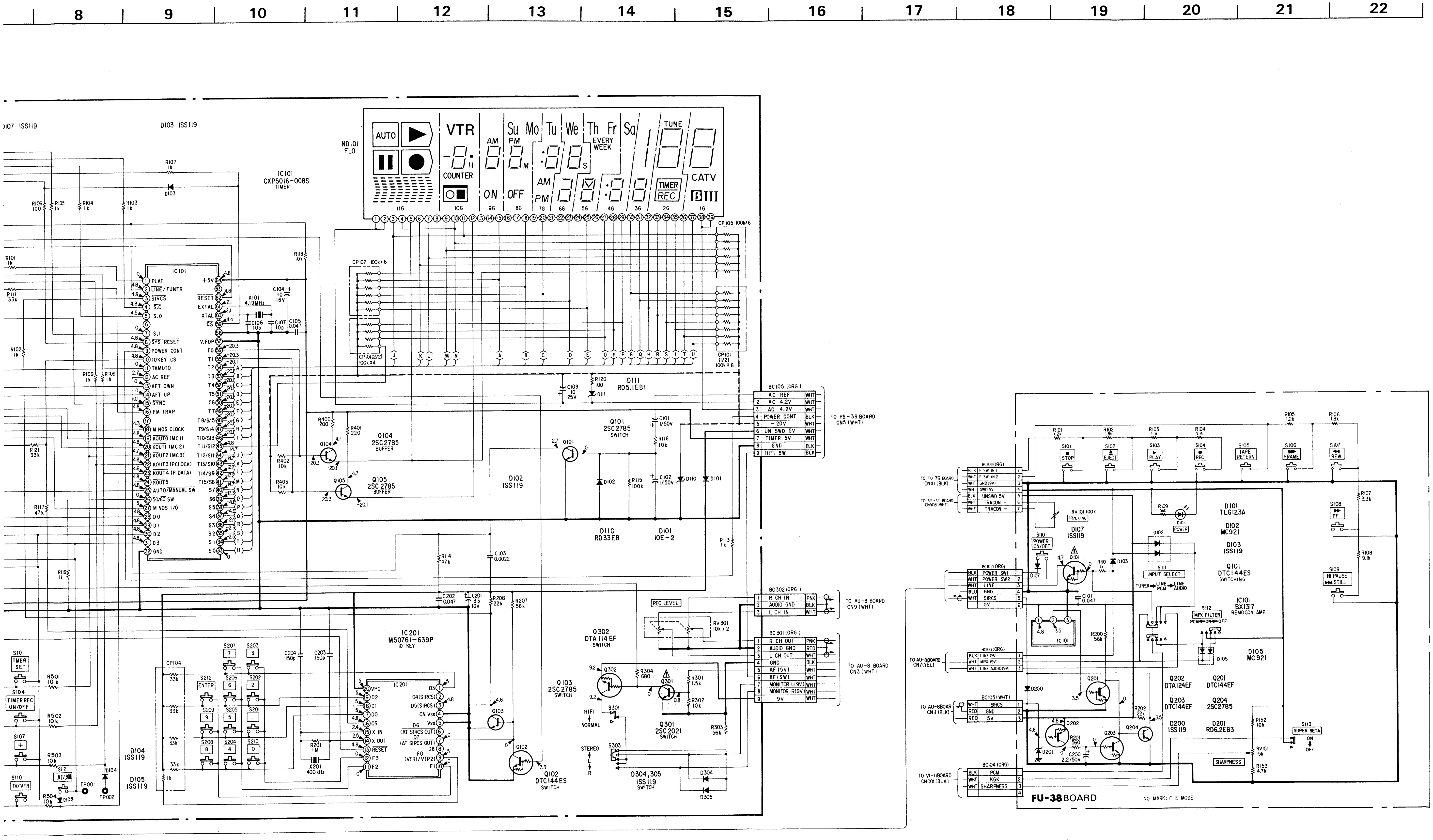
- All resistors are in ohms, 1/6W unless otherwise noted. kΩ: 1000Ω; MΩ: 1000kΩ
- All capacitors are in μF unless otherwise noted. p: μμF 50WV or less are not indicated except for electrolytics.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- The red lines show the main voltages.
- All voltages are dc measured with a VOM (10MΩ).

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piece portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

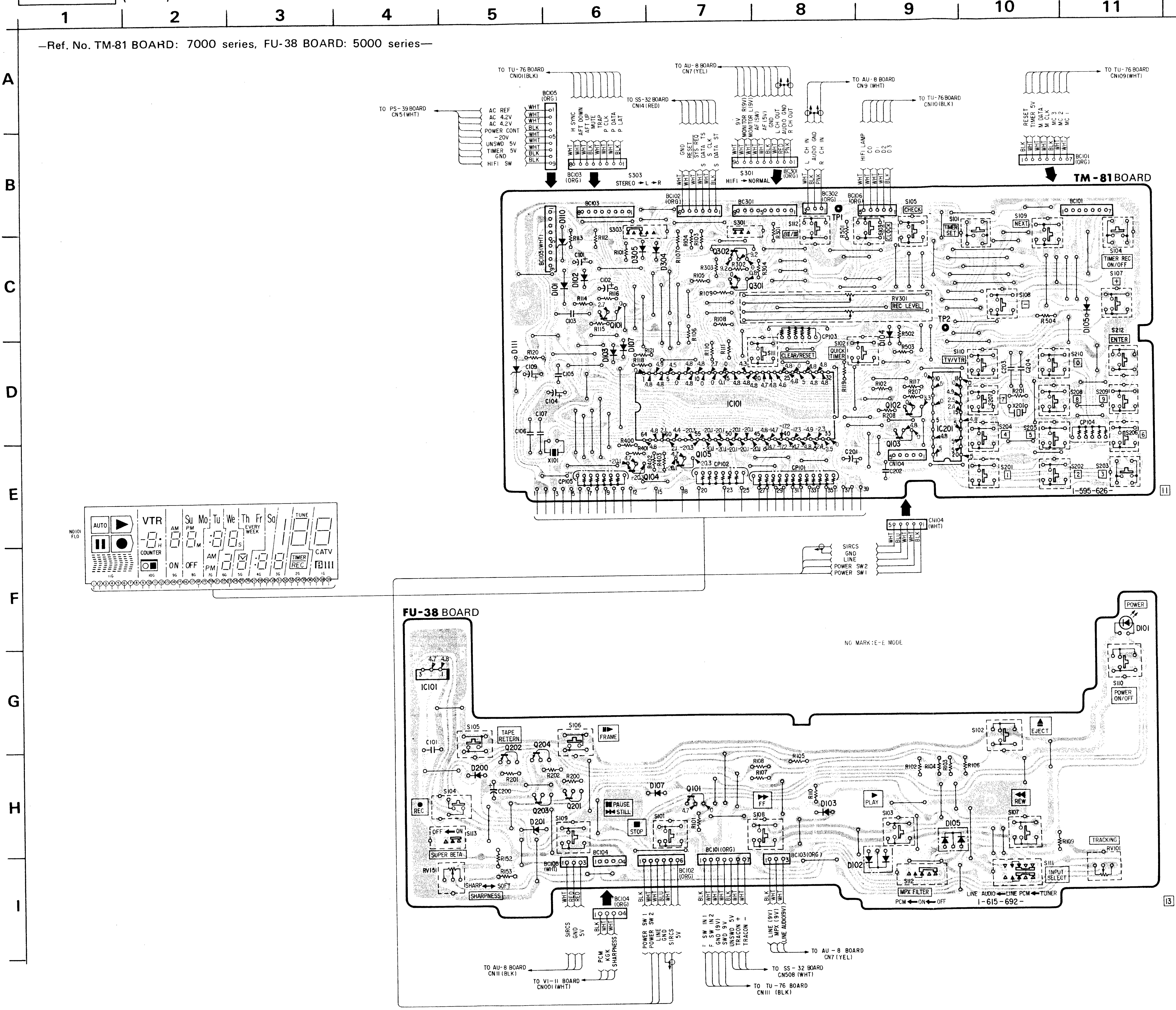

TM-81 BOARD
D107 ISS119
D103 ISS119
ND101 FLO
IC101 CXP5016-008S TIMER
TO SS-32 BOARD CN14 (RED)
BC102 (ORG)
S DATA ST
S CLK
S DATA ST
SYS REG
RESET
GND
CN104 (WHT)
POWER SW 1
POWER SW 2
LINE
GND
SIRCS
TO TU-76 BOARD CN101 (BLK)
BC103 (ORG)
P LAT
P DATA
P CLK
TRAP
MUTO
AFT UP
AFT DOWN
H SYNC
TO TU-76 BOARD CN109 (WHT)
BC101 (ORG)
MC 1
MC 2
MC 3
M CLK
M DATA
TIMER 5V
RESET
TO TU 76 BOARD CN110 (BLK)
BC106 (ORG)
D3
D2
D1
C0
HIFI LAMP
PLAT
LINE/TUNER
SIRCS
S.C
S.0
S.1
SYS RESET
POWER CONT
OKEY CS
TAMUTO
AC REF
AFT DWN
AFT UP
SYNC
FM TRAP
M NOS CLOCK
KOUT0 (MC1)
KOUT1 (MC2)
KOUT2 (MC3)
KOUT3 (PCLOCK)
KOUT4 (P DATA)
KOUT5
AUTO/MANUAL SW
50/60 SW
M NOS I/O
D0
D1
D2
D3
GND
+5V
RESET
EXTAL
XTAL
CS
V.FDP
X101 4.19MHz
AUTO
VTR
COUNTER
ON
OFF
AM
PM
Su Mo Tu We Th Fr Sa
EVERY WEEK
TUNE
CATV
TIMER REC
CP105 100k×6
CP102 100k×6
CP101 100k×8
D111 RD5.1EB1
Q104 2SC2785 BUFFER
Q105 2SC2785 BUFFER
Q101 2SC2785 SWITCH
D102 ISS119
D110 RD33EB
D101 10E-2
BC05 (ORG)
AC REF
AC 4.2V
AC 4.2V
POWER CONT
-20V
UN WD 5V
TIMR 5V
GND
HIFI SW
TO PS-39 BOARD CN5 (WHT)
IC201 M50761-639P 10 KEY
BC02 (ORG)
R H IN
AUIO GND
L H IN
TO AU-8 BOARD CN9 (WHT)
REC LEVEL
RV301 10k×2
BC01 (ORG)
R H OUT
AUIO GND
L H OUT
GND
POWER 5V
AF(SW)
MOTOR L(9V)
MOTOR R(9V)
1V
TO AU-8 BOARD CN3 (WHT)
Q302 DTA114EF SWITCH
Q103 2SC2785 SWITCH
Q301 2SC2021 SWITCH
Q102 DTC144ES SWITCH
D304,305 ISS119 SWITCH
HIFI
NORMAL
STEREO
L
R
S103 CLOCK
S102 QUICK TIMER
S101 TIMER SET
S105 CHECK
S104 TIMER REC ON/OFF
S109 NEXT
S108 −
S107 +
S111 CLEAR /RESET
S110 TV/VTR
S112
TP001
TP002
D104 ISS119
D105 ISS119
S212 ENTER
S207 7
S203 3
S206 6
S202 2
S209 9
S205 5
S201 1
S208 8
S204 4
S210 0
CP104
X201 400kHz
VPO
D2
D1
D0
CS
X IN
X OUT
RESET
F3
F2
D4(SIRCS)
D5(SIRCS)
CN Vss
Vss
D6 (AT SIRCS OUT)
D7 (AT SIRCS OUT)
D8
F0 (VTR1/VTR2)
F1


8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
ND101 FLO
IC101 CXP5016-008S TIMER
IC201 M50761-639P 10 KEY
Q104 2SC2785 BUFFER
Q105 2SC2785 BUFFER
Q101 2SC2785 SWITCH
D102 ISS119
D110 RD33EB
D101 10E-2
D111 RD5.1EB1
Q302 DTA114EF SWITCH
Q103 2SC2785 SWITCH
Q102 DTC144ES SWITCH
Q301 2SC2021 SWITCH
D304,305 ISS119 SWITCH
D104 ISS119
D105 ISS119
X101 4.19MHz
X201 400kHz
BC105 (ORG)
AC REF
AC 4.2V
AC 4.2V
POWER CONT
-20V
UN SWD 5V
TIMER 5V
GND
HIFI SW
TO PS-39 BOARD CN5 (WHT)
BC302 (ORG)
R CH IN
AUDIO GND
L CH IN
TO AU-8 BOARD CN9 (WHT)
BC301 (ORG)
R CH OUT
AUDIO GND
L CH OUT
GND
AF (5V)
AF (SW)
MONITOR L(9V)
MONITOR R(9V)
9V
TO AU-8 BOARD CN3 (WHT)
REC LEVEL
RV301 10k x 2
S101 TIMER SET
S104 TIMER REC ON/OFF
S107 +
S110 TV/VTR
S112
TP001
TP002
HIFI NORMAL
STEREO L R
S301
S303
FU-38 BOARD
NO MARK: E-E MODE
S101 STOP
S102 EJECT
S103 PLAY
S104 REC
S105 TAPE RETERN
S106 FRAME
S107 REW
S108 FF
S109 PAUSE STILL
S110 POWER ON/OFF
S111 INPUT SELECT
TUNER LINE PCM LINE AUDIO
S112 MPX FILTER PCM ON OFF
S113 SUPER BETA ON OFF
SHARPNESS
D101 TLG123A
D102 MC921
D103 ISS119
Q101 DTC144ES SWITCHING
IC101 BX1317 REMOCON AMP
D105 MC921
Q202 DTA124EF
Q201 DTC144EF
Q203 DTC144EF
Q204 2SC2785
D200 ISS119
D201 RD6.2EB3
D107 ISS119
RV101 100k TRACKING
TO TU-76 BOARD CN111 (BLK)
TO SS-32 BOARD CN508 (WHT)
TO AU-8 BOARD CN7 (YEL)
TO AU-8 BOARD CN11 (BLK)
TO VI-11 BOARD CN001 (BLK)
BC101 (ORG)
BC102 (ORG)
BC105 (WHT)
BC104 (ORG)
POWER SW1
POWER SW2
LINE
GND
SIRCS
5V
LINE (9V)
MPX (9V)
LINE AUDIO (9V)
PCM
KGK
SHARPNESS
TRACON +
TRACON -
UNSWD 5V

TM-81 (TIMER) FU-38 (CASSETTE CONTROL SWITCH) PRINTED WIRING BOARDS

- ○— : Indicates a leadwire mounted on the component side.
- ●— : Indicates a leadwire mounted on the printed side.
- ▨ soldering side.
- ▒ B + pattern
- Digital transistor (TM-81: Q102, 302, FU-38: Q101, 201, 202, 203) transistor with resistors.
  Refer to the TM-81, FU-38 board schematic diagram for digital transistor.

—Ref. No. TM-81 BOARD: 7000 series, FU-38 BOARD: 5000 series—

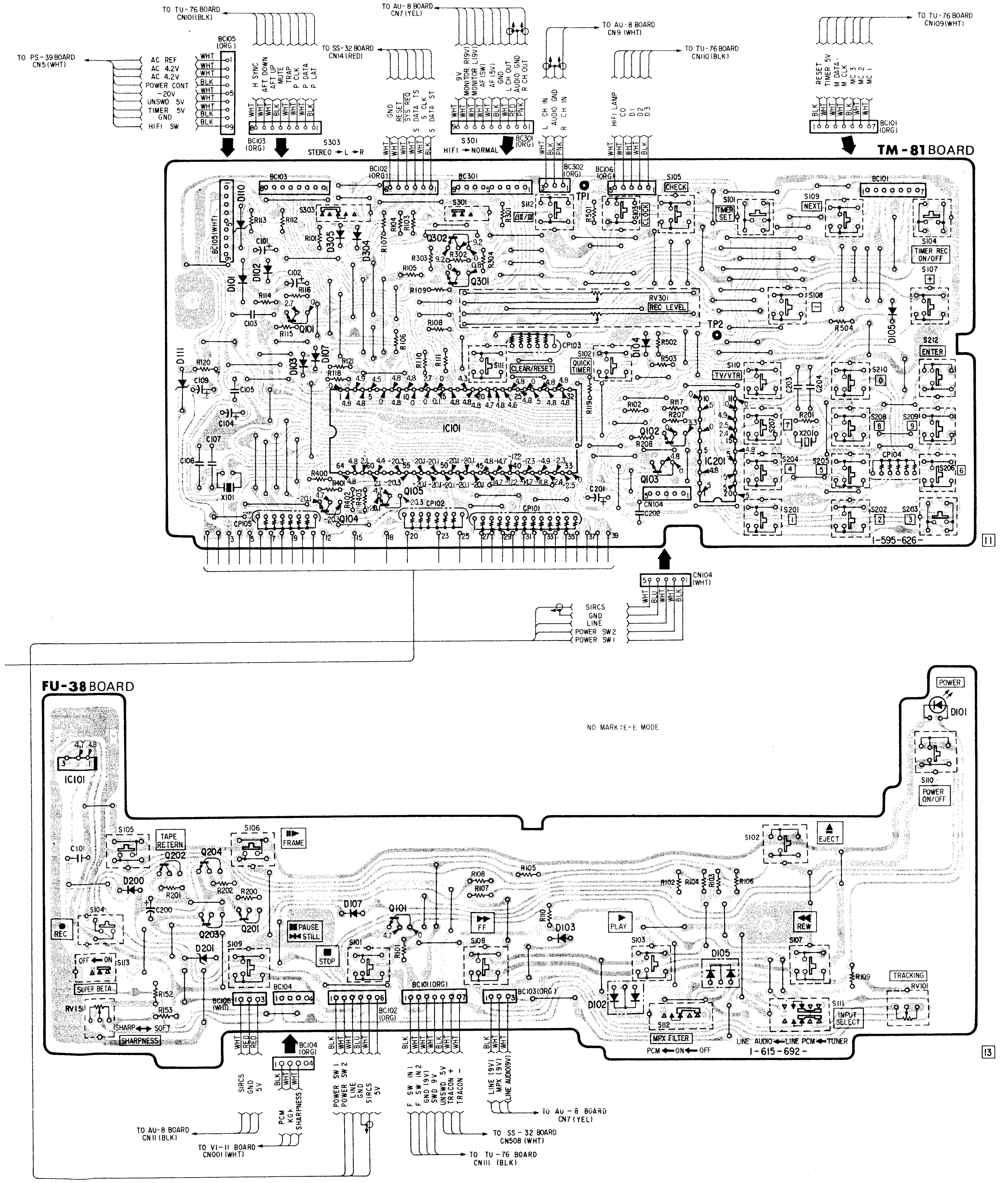

1
2
3
4
5
6
7
8
9
10
11
12
13
A
B
C
D
E
F
G
H
I
TM-81 BOARD
FU-38 BOARD
TO PS-39 BOARD CN5 (WHT)
TO TU-76 BOARD CN101 (BLK)
TO AU-8 BOARD CN7 (YEL)
TO SS-32 BOARD CN14 (RED)
TO AU-8 BOARD CN9 (WHT)
TO TU-76 BOARD CN110 (BLK)
TO TU-76 BOARD CN109 (WHT)
AC REF
AC 4.2V
AC 4.2V
POWER CONT
-20V
UNSWD 5V
TIMER 5V
GND
HIFI SW
H SYNC
AFT DOWN
AFT UP
MUTE
TRAP
P CLK
P DATA
P LAT
GND
RESET
DATA TS
S CLK
DATA ST
9V
MONITOR R (9V)
MONITOR L (9V)
AF (5V)
GND
L CH OUT
AUDIO GND
R CH OUT
L CH IN
AUDIO GND
R CH IN
HIFI LAMP
D0
D1
D2
D3
RESET
TIMER 5V
M DATA
M CLK
MC 2
MC 1
S303 STEREO ← L → R
S301 HIFI → NORMAL
S105 CHECK
S101 TIMER SET
S109 NEXT
S104 TIMER REC ON/OFF
S107 +
S108 −
RV301 REC LEVEL
TP1
TP2
S212 ENTER
S111 CLEAR/RESET
S102 QUICK TIMER
S110 TV/VTR
IC101
IC201
X101
X201
1-595-626-
11
CN104 (WHT)
SIRCS
GND
LINE
POWER SW2
POWER SW1
ND101 FLO
AUTO
VTR
COUNTER
ON
OFF
AM
PM
Su Mo Tu We Th Fr Sa
EVERY WEEK
TUNE
TIMER REC
CATV
NO MARK: E-E MODE
POWER
D101
S110 POWER ON/OFF
S105 TAPE RETERN
S106 FRAME
S102 EJECT
S104 REC
S109 PAUSE STILL
S101 STOP
S108 FF
S103 PLAY
S107 REW
S113 OFF ← ON SUPER BETA
RV151 SHARP ← → SOFT SHARPNESS
S112 MPX FILTER PCM ← ON → OFF
S111 INPUT SELECT LINE AUDIO ← LINE PCM → TUNER
TRACKING RV101
1-615-692-
13
TO AU-8 BOARD CN11 (BLK)
TO VI-11 BOARD CN001 (WHT)
PCM
KGK
SHARPNESS
POWER SW1
POWER SW2
LINE
GND
SIRCS
5V
SW IN 1
SW IN 2
GND (9V)
SWD 9V
UNSWD 5V
TRACON +
TRACON −
LINE (9V)
MPX (9V)
LINE AUDIO (9V)
TO AU-8 BOARD CN7 (YEL)
TO SS-32 BOARD CN508 (WHT)
TO TU-76 BOARD CN111 (BLK)

Q, IC	D	ADJ
	110	
	305,304	
302		
301	101 102	
		RV301
	105	
101		
	104	
	103 107	
	111	
IC101 IC201		
102		
103		
104 105		
	101	
IC101		
202,204		
	200	
203,201 101	107	
	103	
	201	
	105	
	102	RV151
Q, IC	D	AD

ONTROL SWITCH) PRINTED WIRING BOARDS

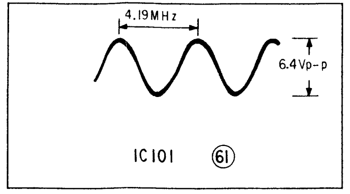
4 5 6 7 8 9 10 11 12 13 14

00 series—


TO PS-39 BOARD CN5 (WHT)
AC REF
AC 4.2V
AC 4.2V
POWER CONT
-20V
UNSWD 5V
TIMER 5V
GND
HIFI SW
BC105 (ORG)
TO TU-76 BOARD CN101 (BLK)
H SYNC
AFT DOWN
AFT UP
MUTE
TRAP
P CLK
P DATA
P LAT
BC103 (ORG)
TO SS-32 BOARD CN14 (RED)
GND
RESET
SYS REQ
S DATA TS
S CLK
S DATA ST
S303
STEREO → L → R
BC102 (ORG)
TO AU-8 BOARD CN7 (YEL)
9V
MONITOR R(9V)
MONITOR L(9V)
AF (SW)
AF (5V)
GND
L CH OUT
AUDIO GND
R CH OUT
S301
HIFI → NORMAL
BC301 (ORG)
TO AU-8 BOARD CN9 (WHT)
L CH IN
AUDIO GND
R CH IN
BC302 (ORG)
TO TU-76 BOARD CN110 (BLK)
HIFI LAMP
C0
D1
D2
D3
BC106 (ORG)
TO TU-76 BOARD CN109 (WHT)
RESET
TIMER 5V
M DATA
M CLK
MC 3
MC 2
MC 1
BC101 (ORG)
TM-81 BOARD
TP1
TP2
S105 CHECK
S101 TIMER SET
S109 NEXT
S104 TIMER REC ON/OFF
S107 +
S108 −
S212 ENTER
RV301 REC LEVEL
S111 CLEAR/RESET
S102 QUICK TIMER
S110 TV/VTR
IC101
IC201
X101
X201
1-595-626-
11
CN104 (WHT)
SIRCS
GND
LINE
POWER SW2
POWER SW1
FU-38 BOARD
NO MARK: E-E MODE
POWER
D101
S110 POWER ON/OFF
IC101
S105 TAPE RETERN
S106 FRAME
S102 EJECT
S104 REC
S113 OFF ON
SUPER BETA
RV151 SHARP ↔ SOFT SHARPNESS
S109 PAUSE STILL
STOP
S101
S108 FF
PLAY
S103
S107 REW
TRACKING RV101
S111 INPUT SELECT
S112 MPX FILTER
PCM ← ON ← OFF
LINE AUDIO ← LINE PCM ← TUNER
1-615-692-
13
BC105 (WHT)
BC104 (ORG)
BC102 (ORG)
BC101 (ORG)
BC103 (ORG)
SIRCS
GND
5V
TO AU-8 BOARD CN11 (BLK)
PCM
KGK
SHARPNESS
TO VI-11 BOARD CN001 (WHT)
POWER SW 1
POWER SW 2
LINE
GND
SIRCS
5V
F SW IN 1
F SW IN 2
GND (9V)
SWD 9V
UNSWD 5V
TRACON +
TRACON −
TO SS-32 BOARD CN508 (WHT)
TO TU-76 BOARD CN111 (BLK)
LINE (9V)
MPX (9V)
LINE AUDIO (9V)
TO AU-8 BOARD CN7 (YEL)

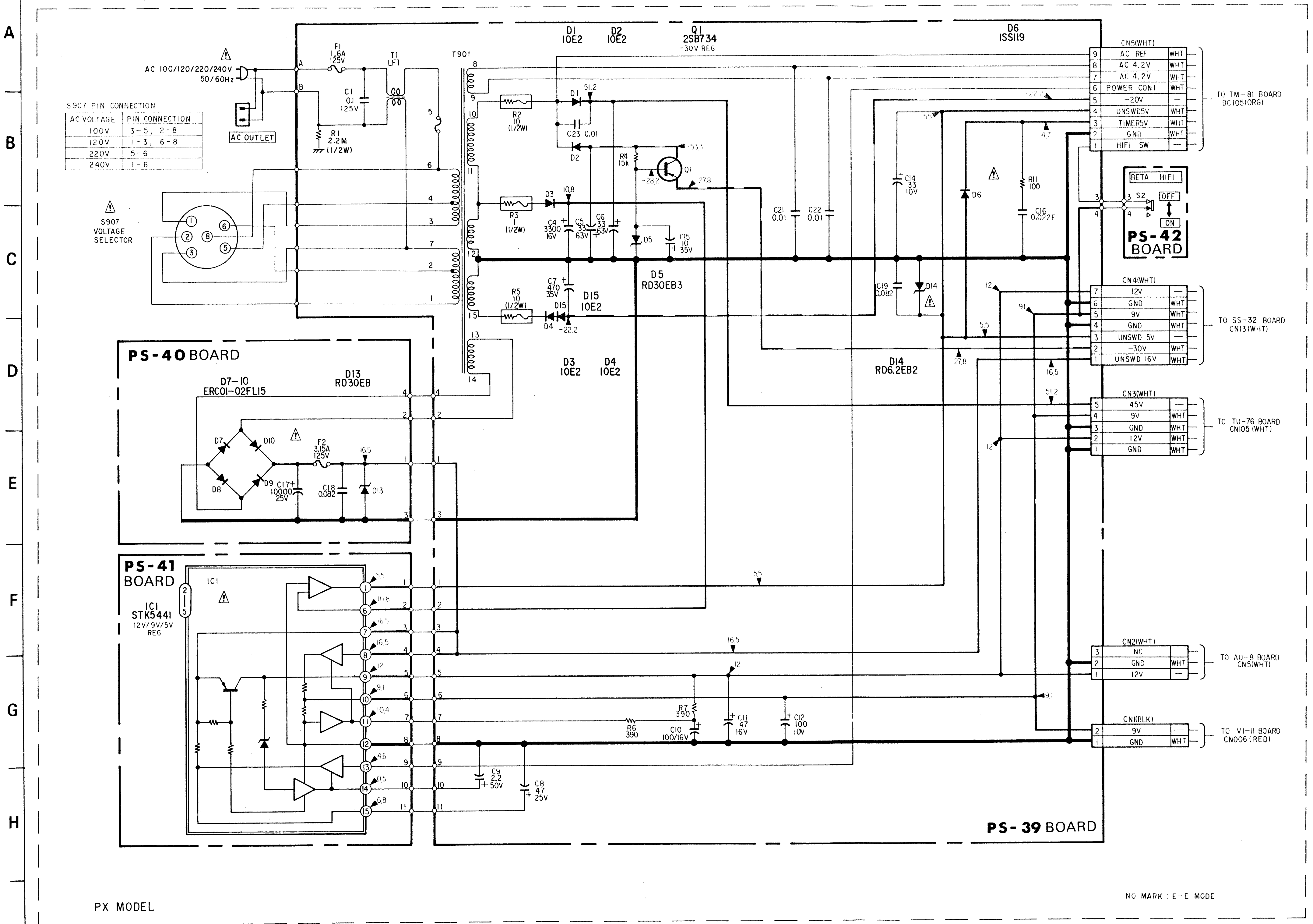
Q, IC	D	ADJ	TP
			1
	110		
	305,304		
302			
301	101 102		
		RV301	
	105		
101			
	104		2
	103 107		
	111		
IC101 IC201			
102			
103			
104 105			
	101		
IC101			
202,204			
	200		
203,201 101	107		
	103		
	201		
	105		
	102	RV151	
		RV101	
Q, IC	D	ADJ	TP

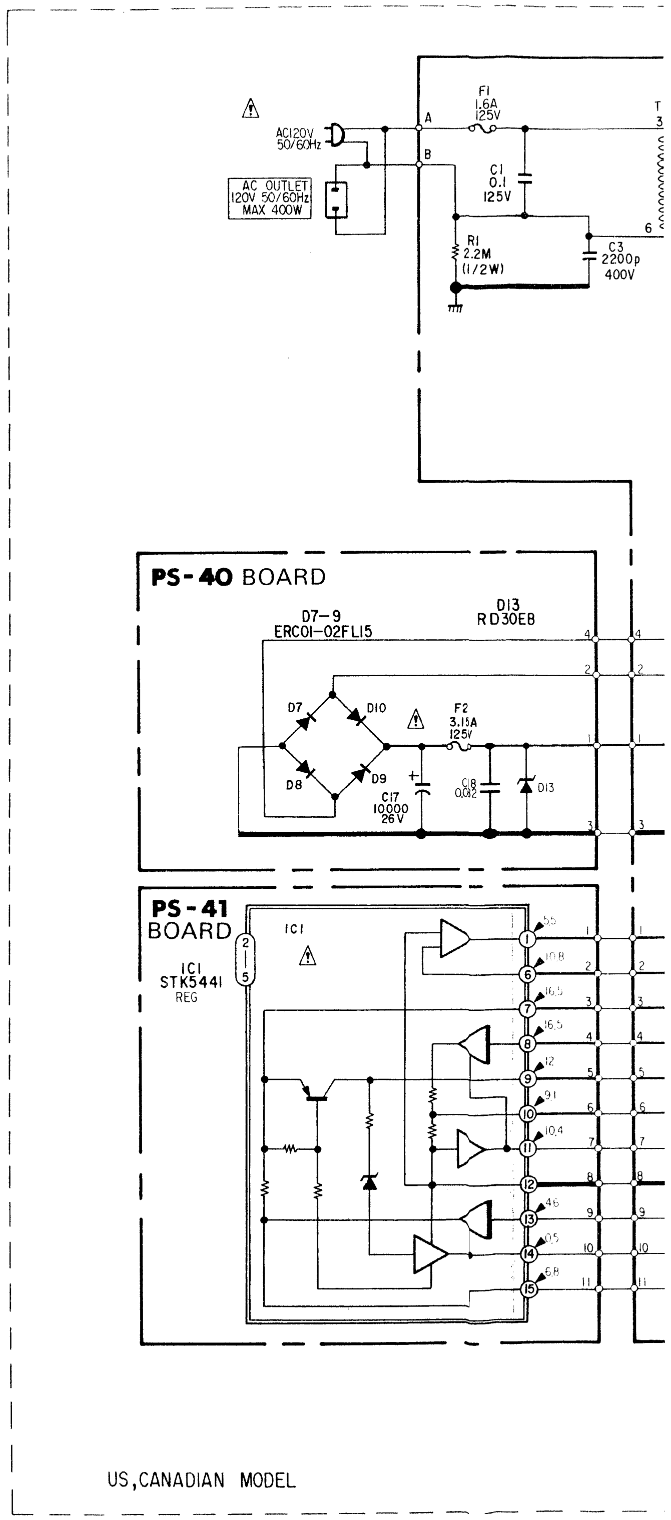
TM-81 BOARD


4.19MHz
6.4Vp-p
IC101 ⑥①

PS-39 PS-40 PS-41 PS-42 (POWER BLOCK SWITCHING REGULATOR) SCHEMATIC DIAGRAMS

—Ref. No. PS-39, PS-40, PS-41, PS-42 BOARD: 6000 series—


AC 100/120/220/240V 50/60Hz
AC OUTLET
F1 1.6A 125V
T1 LFT
C1 0.1 125V
R1 2.2M (1/2W)
T901
S907 PIN CONNECTION
AC VOLTAGE | PIN CONNECTION
100V | 3-5, 2-8
120V | 1-3, 6-8
220V | 5-6
240V | 1-6
S907 VOLTAGE SELECTOR
D1 10E2
D2 10E2
Q1 2SB734 -30V REG
D6 1SS119
R2 10 (1/2W)
C23 0.01
R4 15k
R3 1 (1/2W)
C4 3300 16V
C5 33 63V
C6 33 63V
C15 10 35V
C7 470 35V
R5 10 (1/2W)
D15 10E2
D5 RD30EB3
D3 10E2
D4 10E2
C21 0.01
C22 0.01
C14 33 10V
R11 100
C16 0.022F
C19 0.082
D14 RD6.2EB2
CN5(WHT)
9 AC REF WHT
8 AC 4.2V WHT
7 AC 4.2V WHT
6 POWER CONT WHT
5 -20V
4 UNSWD5V WHT
3 TIMER5V WHT
2 GND WHT
1 HIFI SW
TO TM-81 BOARD BC105(ORG)
BETA HIFI
S2 OFF ON
PS-42 BOARD
CN4(WHT)
7 12V
6 GND WHT
5 9V WHT
4 GND WHT
3 UNSWD 5V
2 -30V WHT
1 UNSWD 16V WHT
TO SS-32 BOARD CN13(WHT)
CN3(WHT)
5 45V
4 9V WHT
3 GND WHT
2 12V WHT
1 GND WHT
TO TU-76 BOARD CN105(WHT)
PS-40 BOARD
D7-10 ERC01-02FL15
D13 RD30EB
F2 3.15A 125V
C17 10000 25V
C18 0.082
PS-41 BOARD
IC1 STK5441 12V/9V/5V REG
CN2(WHT)
3 NC
2 GND WHT
1 12V
TO AU-8 BOARD CN5(WHT)
CN1(BLK)
2 9V
1 GND WHT
TO VI-11 BOARD CN006(RED)
R7 390
R6 390
C10 100/16V
C11 47 16V
C12 100 10V
C9 2.2 50V
C8 47 25V
PS-39 BOARD
NO MARK : E-E MODE
PX MODEL


AC120V 50/60Hz
AC OUTLET 120V 50/60Hz MAX 400W
F1 1.6A 125V
C1 0.1 125V
R1 2.2M (1/2W)
C3 2200p 400V
PS-40 BOARD
D7-9 ERC01-02FL15
D13 RD30EB
F2 3.15A 125V
C17 10000 26V
C8 0.082
PS-41 BOARD
IC1 STK5441 REG
US,CANADIAN MODEL

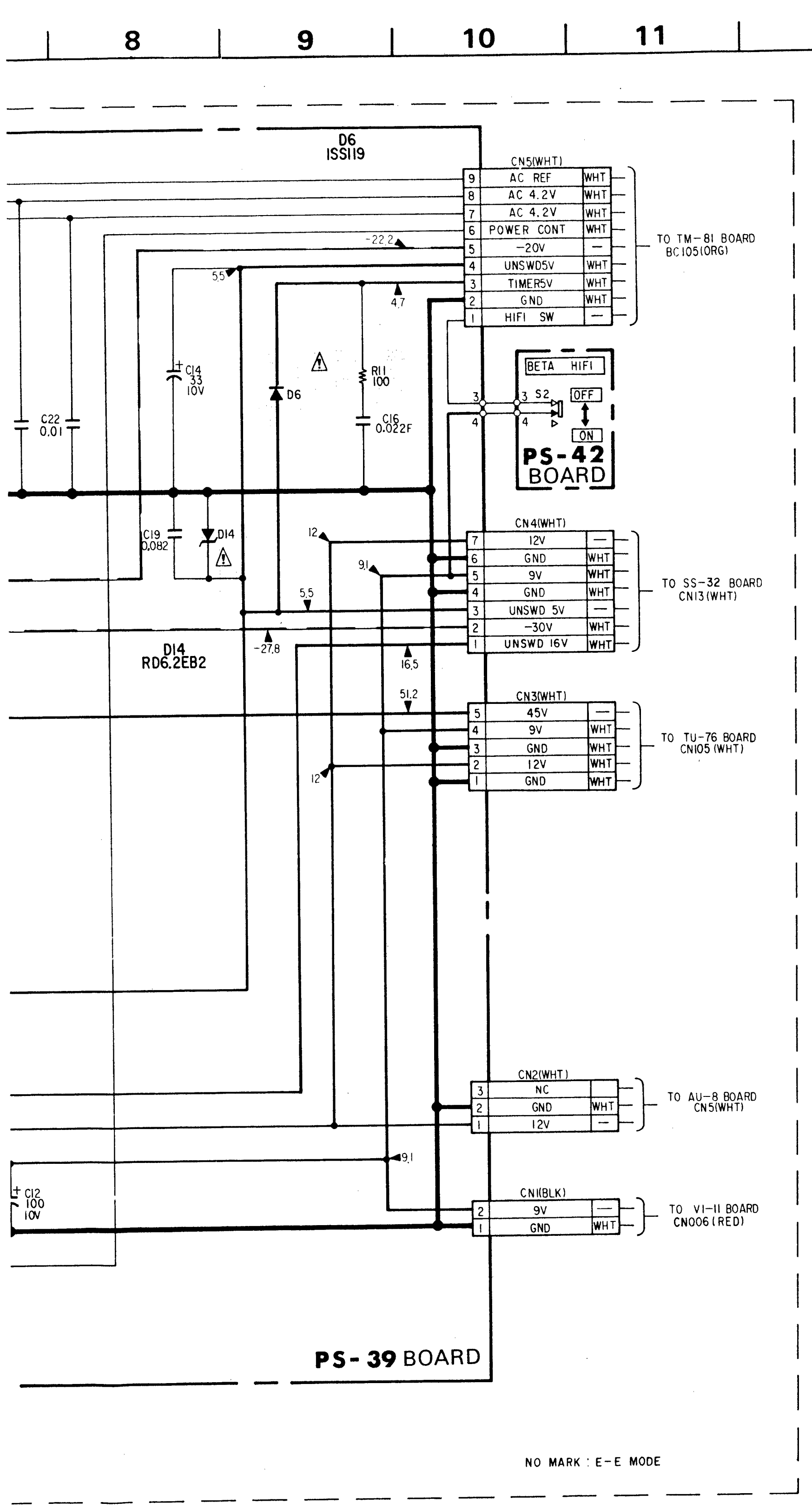
Note:

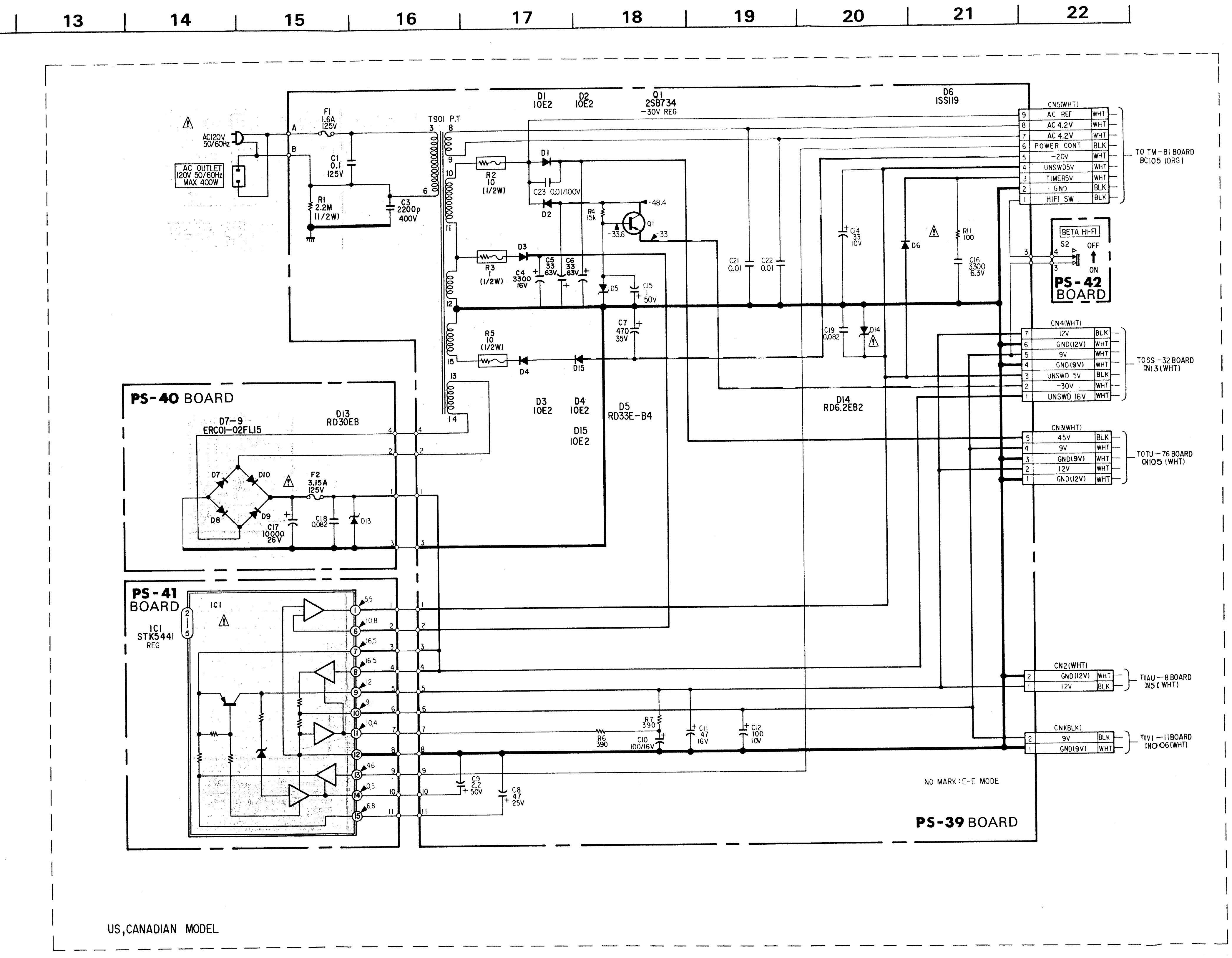
- All resistors are in ohms, 1/6W unless otherwise noted. kΩ: 1000Ω; MΩ: 1000kΩ
- All capacitors are in μF unless otherwise noted. p: μμF 50WV or less are not indicated except for electrolytics.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⏛ : fusible resistor.
- The red lines show the main voltages.
- All voltages are dc measured with a VOM (10MΩ).

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piece portant le numéro spécifié.

When indicating parts by reference number, please include the board name.


8
9
10
11
D6
ISS119
CN5(WHT)
AC REF
AC 4.2V
AC 4.2V
POWER CONT
-20V
UNSWD5V
TIMER5V
GND
HIFI SW
TO TM-81 BOARD BC105(ORG)
-22.2
5.5
4.7
C14 33 10V
D6
R11 100
C16 0.022F
C22 0.01
BETA HIFI
S2
OFF
ON
PS-42 BOARD
C19 0.082
D14
CN4(WHT)
12V
GND
9V
GND
UNSWD 5V
-30V
UNSWD 16V
TO SS-32 BOARD CN13(WHT)
12
9.1
5.5
-27.8
16.5
51.2
D14
RD6.2EB2
CN3(WHT)
45V
9V
GND
12V
GND
TO TU-76 BOARD CN105 (WHT)
CN2(WHT)
NC
GND
12V
TO AU-8 BOARD CN5(WHT)
9.1
C12 100 10V
CN1(BLK)
9V
GND
TO VI-11 BOARD CN006 (RED)
PS-39 BOARD
NO MARK : E-E MODE


12
13
14
15
16
17
18
19
20
21
22
AC120V 50/60Hz
AC OUTLET 120V 50/60Hz MAX 400W
F1 1.6A 125V
C1 0.1 125V
R1 2.2M (1/2W)
C3 2200p 400V
T901 P.T
D1 10E2
D2 10E2
Q1 2SB734 -30V REG
R2 10 (1/2W)
C23 0.01/100V
R4 15k
-48.4
-33.6
-33
R3 1 (1/2W)
D3
C4 3300 16V
C5 33 63V
C6 33 63V
D5
C15 1 50V
C7 470 35V
R5 10 (1/2W)
D4
D15
D3 10E2
D4 10E2
D15 10E2
D5 RD33E-B4
PS-40 BOARD
D7-9 ERC01-02FL15
D13 RD30EB
D7
D10
D8
D9
F2 3.15A 125V
C17 10000 26V
C18 0.082
D13
PS-41 BOARD
IC1 STK5441 REG
IC1
5.5
10.8
16.5
16.5
12
9.1
10.4
46
0.5
6.8
R7 390
R6 390
C10 100/16V
C11 47 16V
C12 100 10V
C9 2.2 50V
C8 47 25V
D6 ISS119
CN5(WHT)
AC REF
AC 4.2V
AC 4.2V
POWER CONT
-20V
UNSWD5V
TIMER5V
GND
HIFI SW
TO TM-81 BOARD BC105 (ORG)
C21 0.01
C22 0.01
C14 33 10V
D6
R11 100
C16 3300 6.3V
BETA HI-FI
S2
OFF
ON
PS-42 BOARD
C19 0.082
D14
CN4(WHT)
12V
GND(12V)
9V
GND(9V)
UNSWD 5V
-30V
UNSWD 16V
TO SS-32 BOARD CN13(WHT)
D14 RD6.2EB2
CN3(WHT)
45V
9V
GND(9V)
12V
GND(12V)
TO TU-76 BOARD CN105 (WHT)
CN2(WHT)
GND(12V)
12V
TO AU-8 BOARD N5 (WHT)
CN1(BLK)
9V
GND(9V)
TO VI-11 BOARD NO 06(WHT)
NO MARK : E-E MODE
PS-39 BOARD
US,CANADIAN MODEL

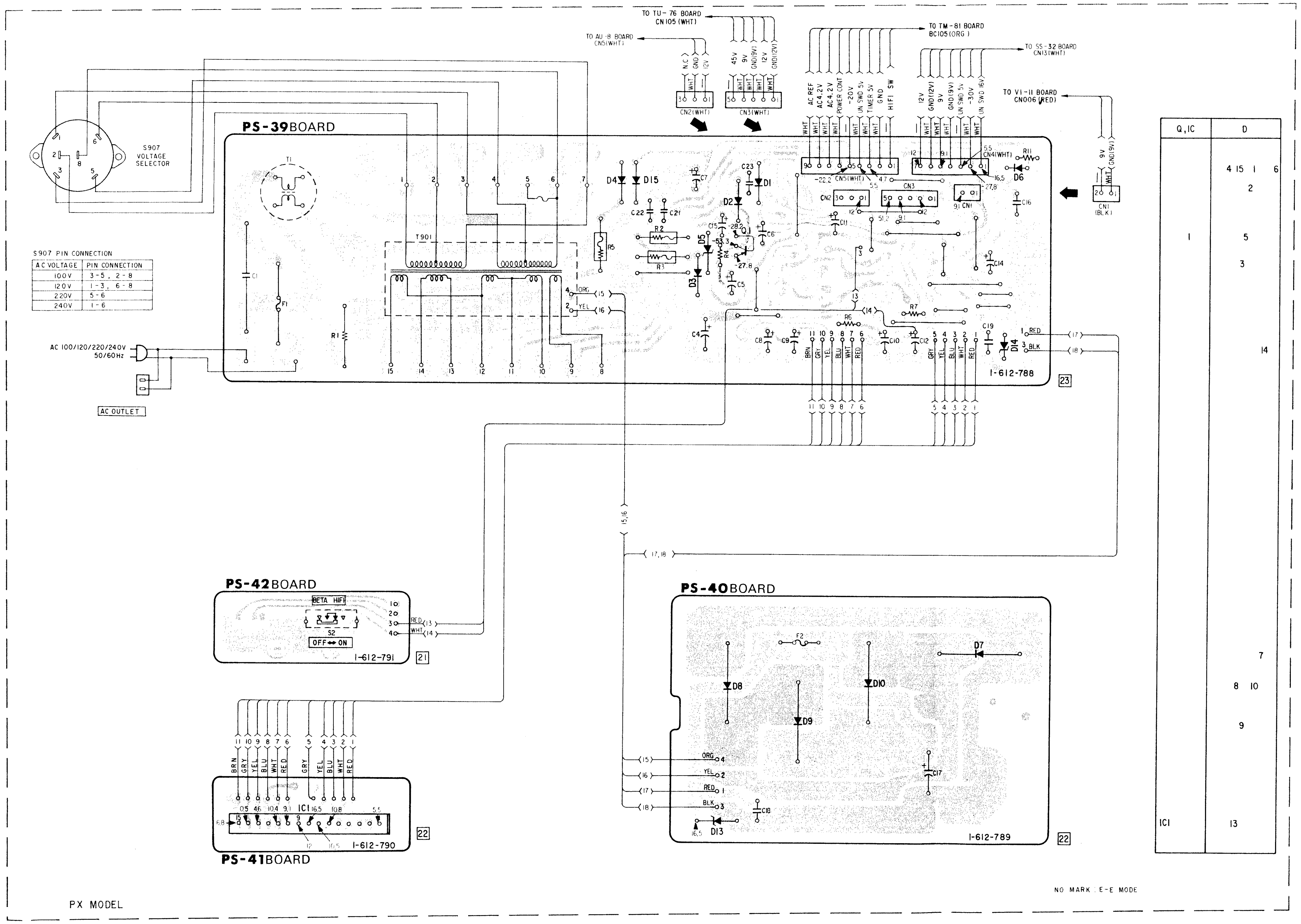
nd mark ⚠
part number

When indicating parts by reference number, please include the board name.

ne marque
mplacer que

PS-39 PS-40 PS-41 PS-42 (POWER BLOCK SWITCHING REGULATOR) PRINTED WIRING BOARDS

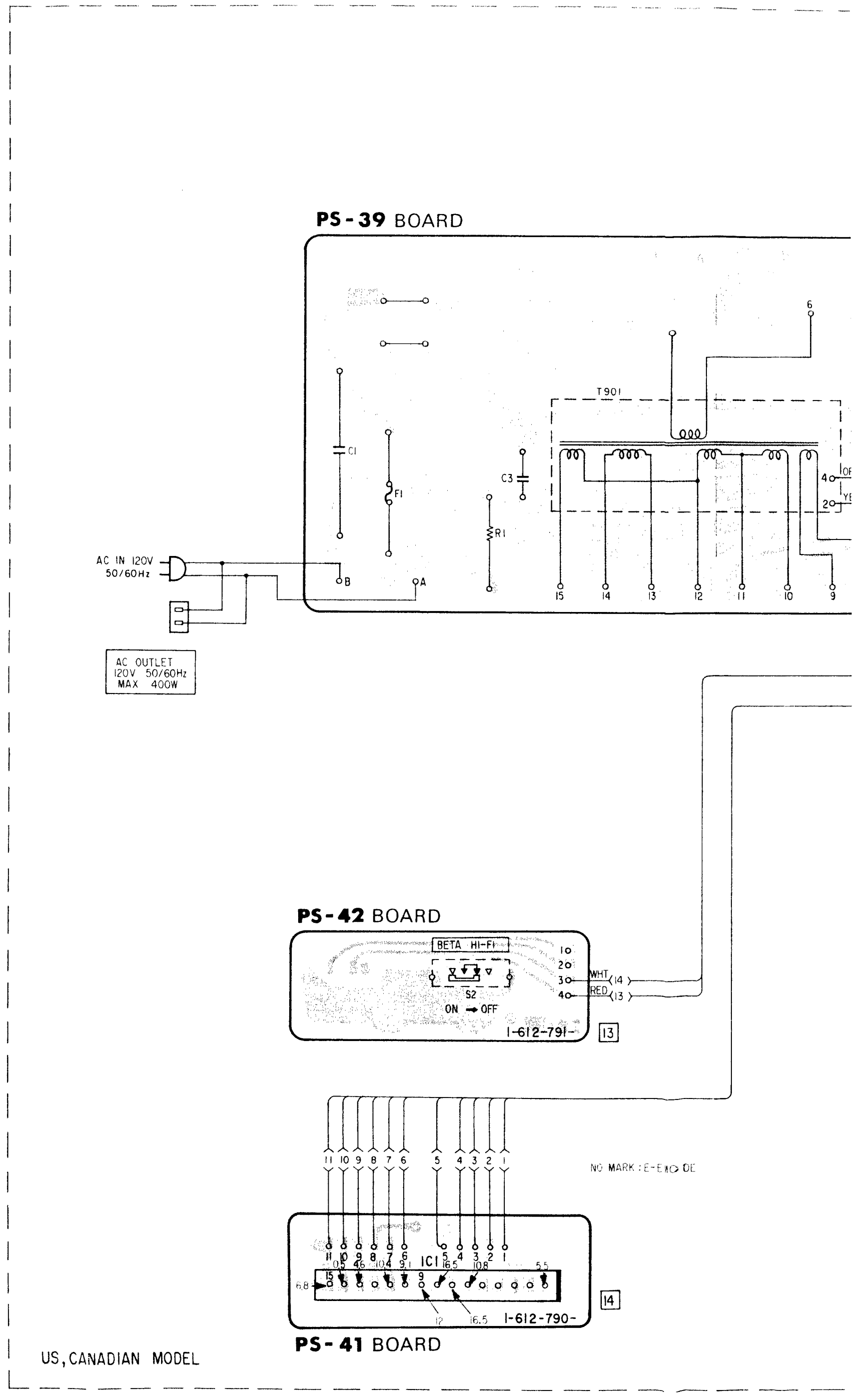
—Ref. No. PS-39, PS-40, PS-41, PS-42 BOARD: 6000 series—


TO TU-76 BOARD CN105 (WHT)
TO AU-8 BOARD CN5(WHT)
N.C
GND
12V
45V
9V
GND(9V)
12V
GND(12V)
CN2(WHT)
CN3(WHT)
TO TM-81 BOARD BC105(ORG)
AC REF
AC4.2V
AC4.2V
POWER CONT
-20V
UN SWD 5V
TIMER 5V
GND
HIFI SW
TO SS-32 BOARD CN13(WHT)
12V
GND(12V)
9V
GND(9V)
UN SWD 5V
-30V
UN SWD 16V
TO VI-11 BOARD CN006 (RED)
9V
GND(9V)
CN1 (BLK)
WHT
S907 VOLTAGE SELECTOR
PS-39BOARD
T1
T901
C1
F1
R1
R5
D4
D15
C7
C23
D1
D2
C22
C21
R2
R3
D5
D3
R4
Q1
C15
C6
C5
C4
-28.2
-53.3
-27.8
CN5(WHT)
-22.2
5.5
4.7
CN2
CN3
CN4(WHT)
CN1
R11
D6
C16
C11
C14
R6
R7
C8
C9
C10
C12
C19
D14
RED
BLK
ORG
YEL
BRN
GRY
BLU
1-612-788
23
AC 100/120/220/240V 50/60Hz
AC OUTLET
PS-42BOARD
BETA HIFI
S2
OFF ⟷ ON
1-612-791
21
PS-40BOARD
F2
D7
D8
D9
D10
D13
C17
C18
1-612-789
22
PS-41BOARD
IC1
1-612-790
22
NO MARK E-E MODE
PX MODEL

S907 PIN CONNECTION

AC VOLTAGE	PIN CONNECTION
100V	3-5, 2-8
120V	1-3, 6-8
220V	5-6
240V	1-6

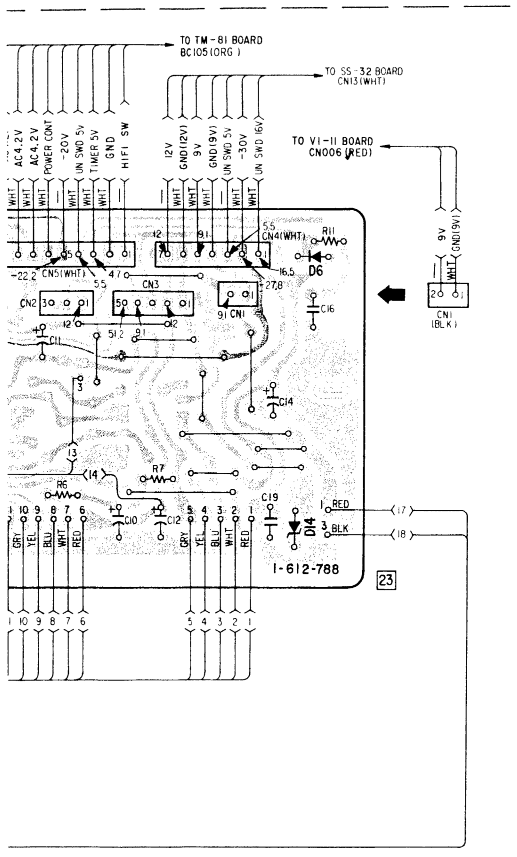
Q, IC	D
	4 15 1 6
	2
1	5
	3
	14
	7
	8 10
	9
IC1	13

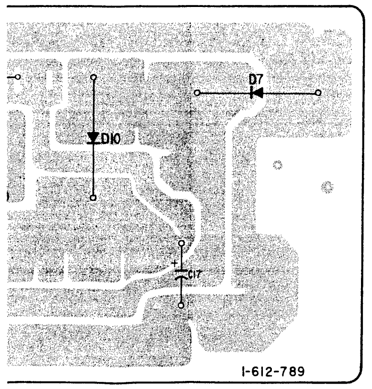

PS-39 BOARD
T901
C1
F1
C3
R1
AC IN 120V 50/60Hz
AC OUTLET 120V 50/60Hz MAX 400W
PS-42 BOARD
BETA HI-FI
S2
ON → OFF
1-612-791
13
WHT
RED
PS-41 BOARD
IC1
1-612-790
14
NO MARK E-E MODE
US, CANADIAN MODEL

ED WIRING BOARDS

8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22

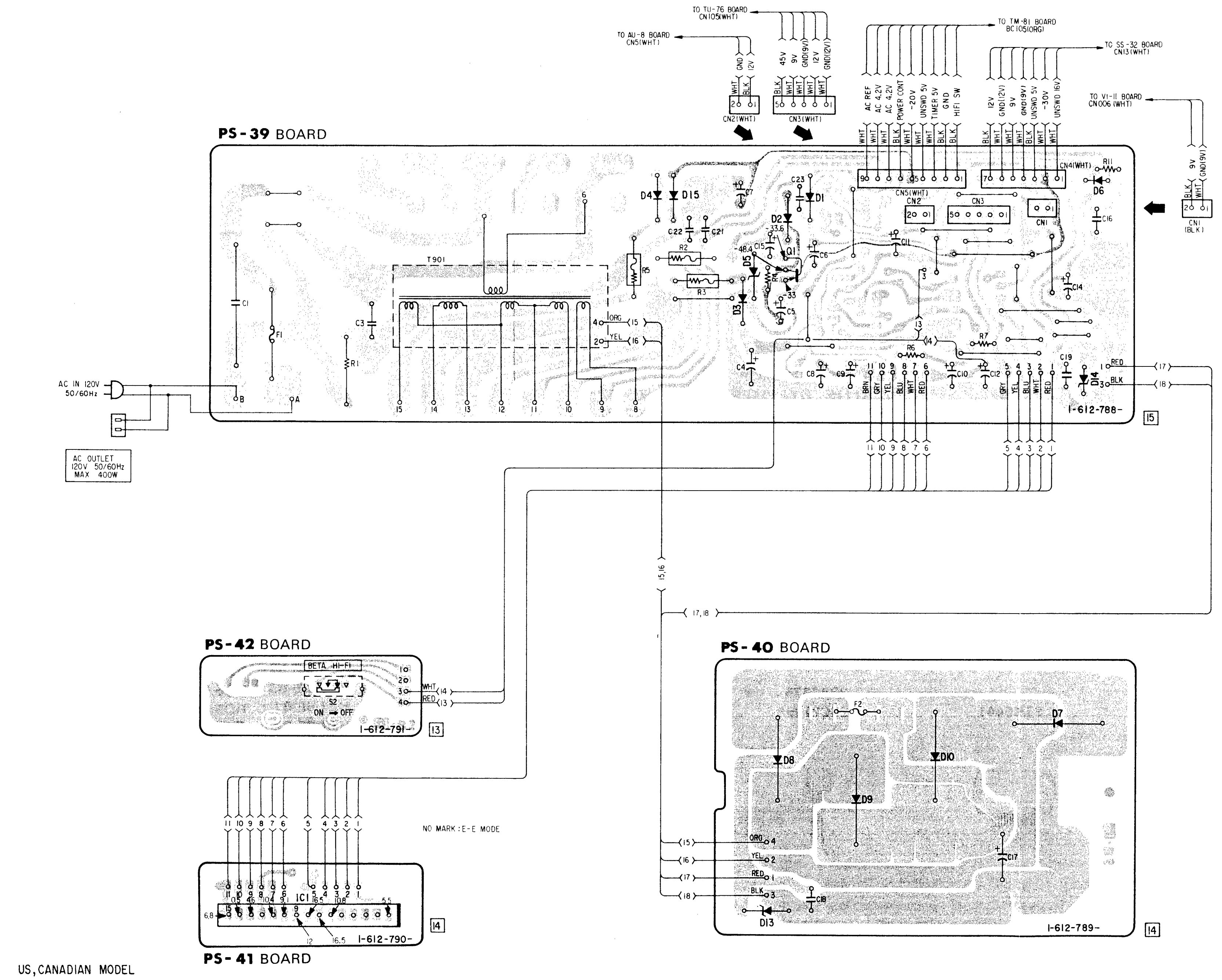
- o— : Indicates a leadwire mounted on the component side.
- ●— : Indicates a leadwire mounted on the printed side.
- ▨ soldering side.
- ▨ B + pattern
- ▨ B - pattern


TO TM-81 BOARD
BC105(ORG)
TO SS-32 BOARD
CN13(WHT)
TO VI-11 BOARD
CN006(RED)
CN5(WHT)
CN4(WHT)
CN3
CN2
CN1
CN1 (BLK)
D6
D14
R11
C16
C14
C19
RED
BLK
1-612-788
23


D7
D10
C17
1-612-789
22

Q, IC	D
	4 15 1 6
	2
1	5
	3
	14
	7
	8 10
	9
IC1	13

NO MARK : E-E MODE

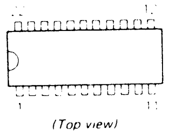

TO TU-76 BOARD
CN105(WHT)
TO AU-8 BOARD
CN5(WHT)
TO TM-81 BOARD
BC105(ORG)
TO SS-32 BOARD
CN13(WHT)
TO VI-11 BOARD
CN006(WHT)
CN2(WHT)
CN3(WHT)
PS-39 BOARD
CN5(WHT)
CN4(WHT)
CN3
CN2
CN1
CN1 (BLK)
T901
F1
AC IN 120V 50/60Hz
AC OUTLET 120V 50/60Hz MAX 400W
1-612-788-
15
PS-42 BOARD
BETA HI-FI
S2
ON → OFF
1-612-791-
13
PS-41 BOARD
IC1
1-612-790-
14
NO MARK : E-E MODE
PS-40 BOARD
F2
D7
D8
D9
D10
D13
C17
C8
ORG
YEL
RED
BLK
1-612-789-
14

US, CANADIAN MODEL

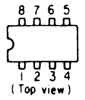
Q, IC	D
	4 15 1 6
	2
1	5
	3
	14
	7
	8 10
	9
IC1	13

4-3. SEMICONDUCTORS

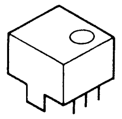
AN6291
µPC1520CA



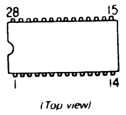
BA4558
LM358P
NJM4556D
NJM4558D
NJM4560D
NJM4560D-D
µPC358C
µPC393C
µPC4558C
µPC4558CR


8 7 6 5
1 2 3 4
(Top view)

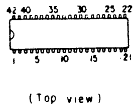
BX1317



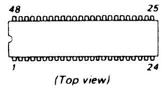
CX20014A
CX20045
CX866B


28
15
1
14
(Top view)

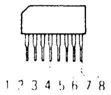
CX10021B-N
CX10021B-NP
CX194B-5
CX20097
CX20104
CX20105
CX20112
CX7989-A


42 40 35 30 25 22
1 5 10 15 21
(Top view)

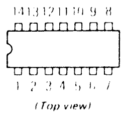
CX20043


48
25
1
24
(Top view)

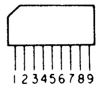
CX20061



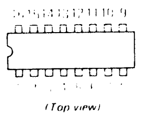
CX20073
CX7982
CXK1003P
MB3614
µPC324C


14 13 12 11 10 9 8
1 2 3 4 5 6 7
(Top view)

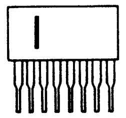
CX894
LA7205



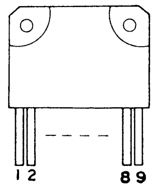
HD14052BP
MB84052B
MSM4052BRS
TC4052BP
TK15010



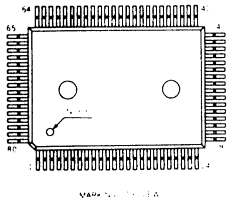
M5201L



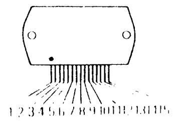
M54543L



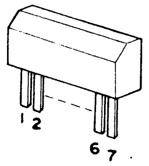
MB88551-162G


64
41
65
40
80
1
24

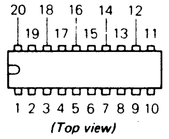
STK5441



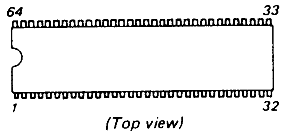
µPC1513HA



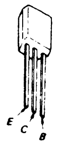
M50761-639P


20 18 16 14 12
19 17 15 13 11
1 2 3 4 5 6 7 8 9 10
(Top view)

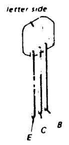
CXP5016-008S


64
33
1
32
(Top view)

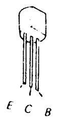
2SA1048 **2SC403SP**
2SA1115 **DTA114ES**
2SC2458 **DTA144ES**
2SC2603 **DTC124ES**
2SC2669 **DTC143ES**



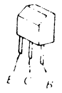
2SA1175
2SC2785


letter side
E C B

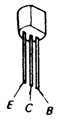
2SA933S



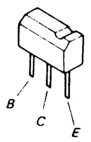
2SB734
2SD773
2SD774



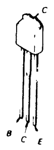
2SB740
2SC1474
2SC1475
2SC1740S
2SD788
2SD789



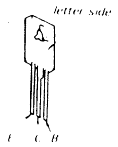
2SC1652
2SC2021
2SC2673
DTA114EF
DTA124EF
DTC144EF



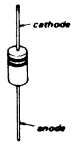
2SD1164



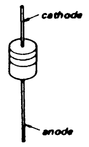
2SD882


letter side
E C B

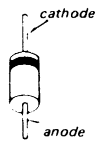
10E-1
10E-2
11E-2
ERA15-02C
ERB12-02RK


cathode
anode

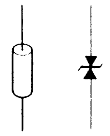
1SS119
1SS148
1SS202-1


cathode
anode

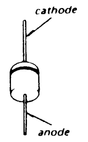
1SS133 **RD33E-B**
EQA02-06C **RD33E-B4**
EQA02-07C **RD36E-B1**
EQA02-07D **RD5.1E-B**
EQA02-32C **RD5.1E-B2**
EQA02-33A **RD5.1E-B3**
HZ33E-B4 **RD5.1E-L1**
HZ36E-B1 **RD5.1E-L2**
HZ5.6E-B2 **RD5.1E-L3**
HZ5.1E-B1 **RD5.6E-B**
HZ5.1E-B2 **RD5.6E-B1**
HZ5.1E-B3 **RD5.6E-B2**
HZ7.5E-B1 **RD5.6E-B3**
HZ7.5E-B2 **RD5.6E-N3**
HZ7.5E-B3 **RD6.2E-B**
RD10E-B3 **RD6.2E-B2**
RD30E-B **RD6.2E-B3**
RD30E-B1 **RD6.2E-N2**
RD30E-B2 **RD7.5E-B**
RD30E-B3 **RD8.2E-B1**
RD30E-B4 **RD9.1E-W**


cathode
anode

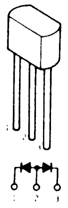
EQA11-09A



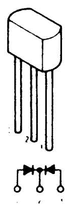
ERC01-02FL15


cathode
anode

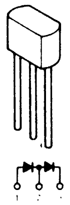
MC911



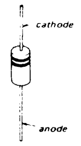
MC921



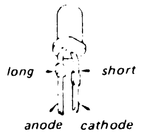
MC931



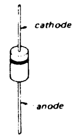
SIB-01-02


cathode
anode

TLG123A
TLR123

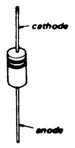

long
short
anode
cathode

30D4

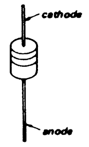

cathode
anode

4-4.
— B

10E-1
10E-2
11E-2
ERA15-02C
ERB12-02RK

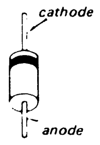

cathode
anode

1SS119
1SS148
1SS202-1

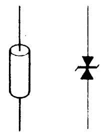

cathode
anode

1SS133
EQA02-06C
EQA02-07C
EQA02-07D
EQA02-32C
EQA02-33A
HZ33E-B4
HZ36E-B1
HZ5.6E-B2
HZ5.1E-B1
HZ5.1E-B2
HZ5.1E-B3
HZ7.5E-B1
HZ7.5E-B2
HZ7.5E-B3
RD10E-B3
RD30E-B
RD30E-B1
RD30E-B2
RD30E-B3
RD30E-B4

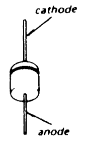
RD33E-B
RD33E-B4
RD36E-B1
RD5.1E-B
RD5.1E-B2
RD5.1E-B3
RD5.1E-L1
RD5.1E-L2
RD5.1E-L3
RD5.6E-B
RD5.6E-B1
RD5.6E-B2
RD5.6E-B3
RD5.6E-N3
RD6.2E-B
RD6.2E-B2
RD6.2E-B3
RD6.2E-N2
RD7.5E-B
RD8.2E-B1
RD9.1E-W


cathode
anode

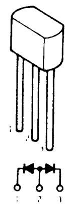
EQA11-09A



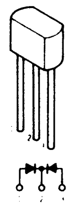
ERC01-02FL15


cathode
anode

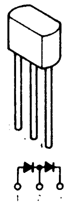
MC911



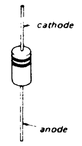
MC921



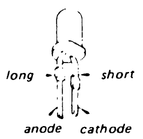
MC931



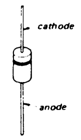
SIB-01-02


cathode
anode

TLG123A
TLR123

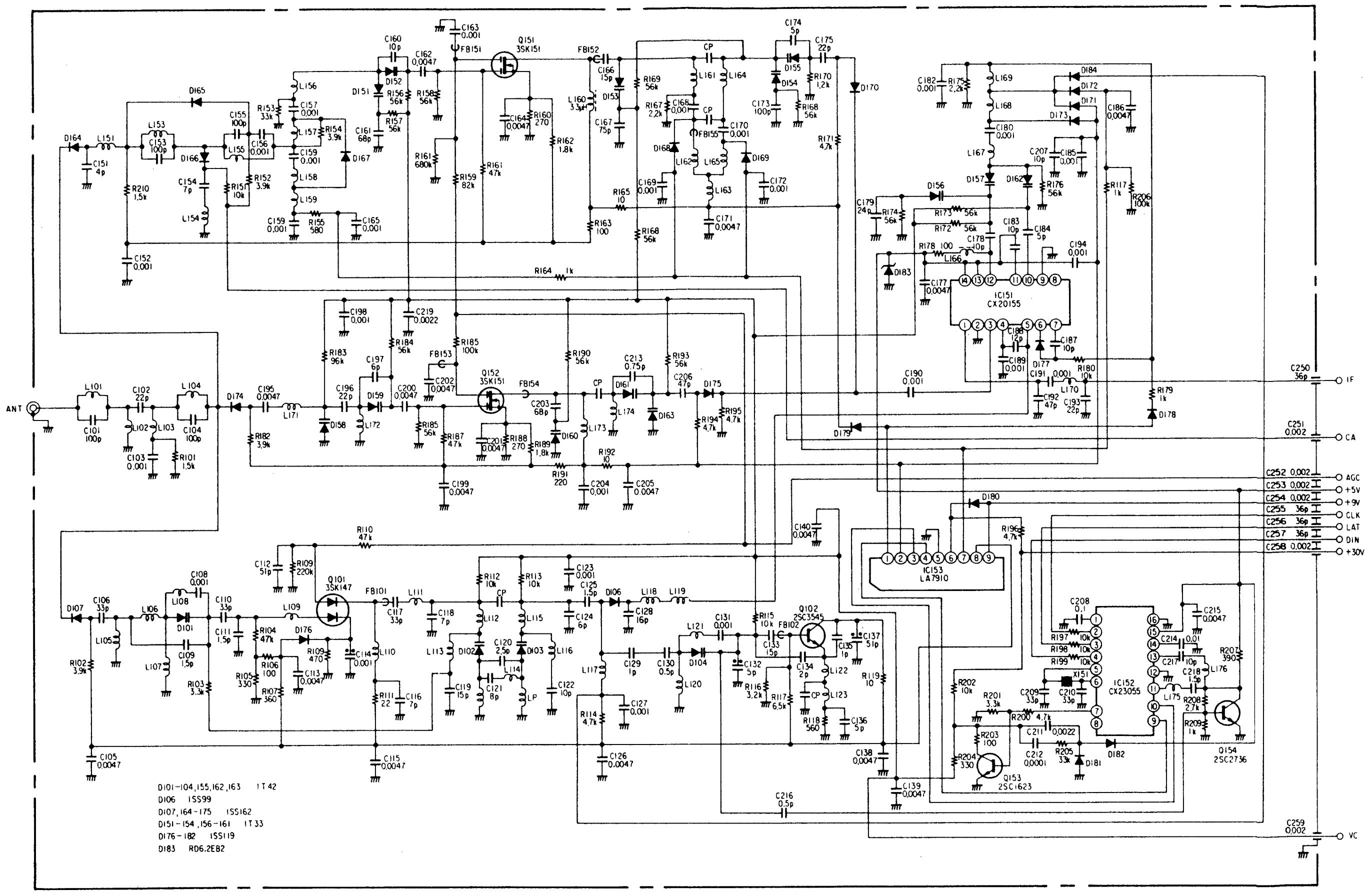

long
short
anode
cathode

30D4


cathode
anode

4-4. UHF/VHF TUNER SCHEMATIC DIAGRAM

— BTP-201D —


ANT
IC151
CX20155
IC153
LA7910
IC152
CX23055
Q151
3SK151
Q152
3SK151
Q101
3SK147
Q102
2SC3545
Q153
2SC1623
Q154
2SC2736
C250 36p
IF
C251 0.002
CA
C252 0.002
AGC
C253 0.002
+5V
C254 0.002
+9V
C255 36p
CLK
C256 36p
LAT
C257 36p
DIN
C258 0.002
+30V
C259 0.002
VC
D101–104,155,162,163 1T42
D106 1SS99
D107,164–175 1SS162
D151–154,156–161 1T33
D176–182 1SS119
D183 RD6.2EB2

Note: Tuner reference numbers are not included in the Electrical Parts List.

SECTION 5
EXPLODED VIEWS

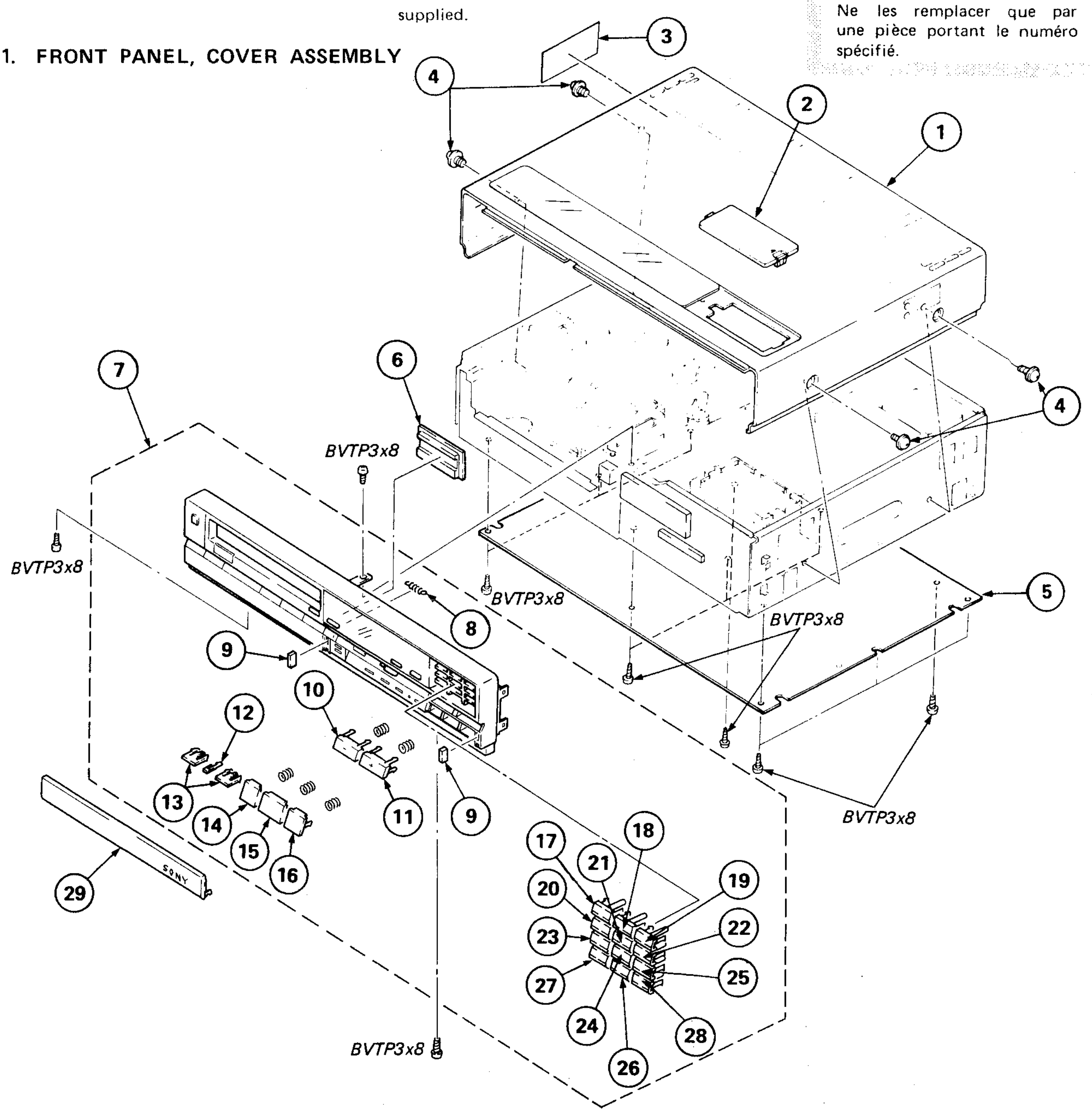
NOTE:

- Itmes with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part numer specified.

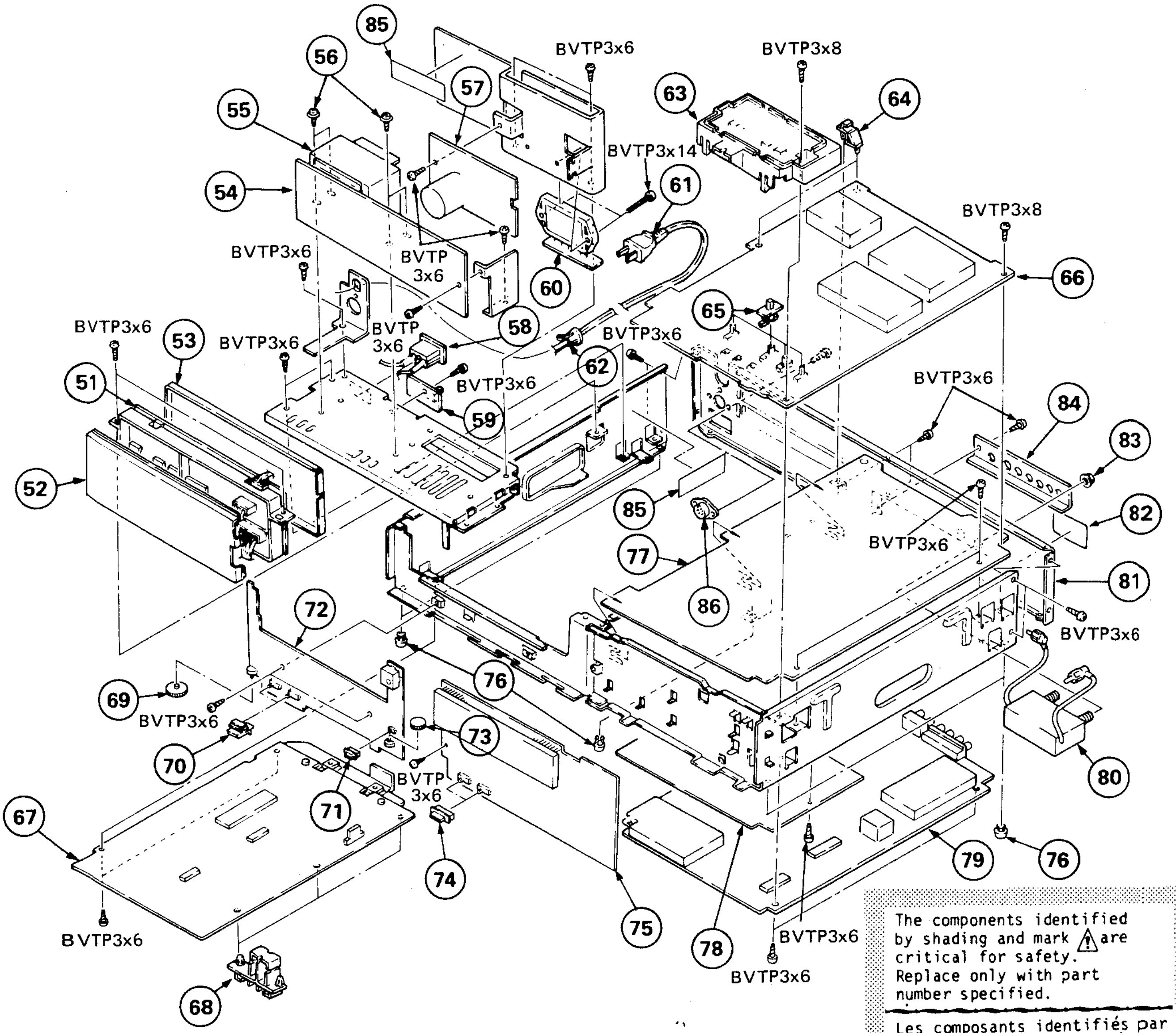
Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

5-1. FRONT PANEL, COVER ASSEMBLY



No.	Pert No.	Description	Remark	No.	Pert No.	Description	Remark
1	X-3693-404-1	CASE ASSY (BLACK), UPPER		16	3-693-418-11	BUTTON, TIMER	
2	X-3684-146-2	LID ASSY, PRESET		17	3-693-447-01	BUTTON, 10 KEY	
3	*3-703-845-01	LABEL (N) (U/C), MAIN CAUTION		18	3-693-447-11	BUTTON, 10 KEY	
4	4-886-821-21	SCREW, M3 CASE STOPPER		19	3-693-447-21	BUTTON, 10 KEY	
5	*3-684-356-01	PLATE, BOTTOM		20	3-693-447-31	BUTTON, 10 KEY	
6	1-520-481-11	METER, LEVEL		21	3-693-447-41	BUTTON, 10 KEY	
7	X-0770-093-0	PANEL ASSY, FRONT	8-28	22	3-693-447-51	BUTTON, 10 KEY	
8	3-570-895-02	SPRING, TENSION		23	3-693-447-61	BUTTON, 10 KEY	
9	3-684-461-01	MAGNET, POCKET LOCK		24	3-693-447-71	BUTTON, 10 KEY	
10	3-693-421-11	BUTTON (-), UD		25	3-693-447-81	BUTTON, 10 KEY	
11	3-693-420-11	BUTTON (+), UD		26	3-693-447-91	BUTTON, 10 KEY	
12	3-693-405-01	BUTTON, CLOCK		27	3-693-448-01	BUTTON, (2), 10 KEY	
13	3-693-404-01	BUTTON, CHECK		28	3-693-448-11	BUTTON, (2), 10 KEY	
14	3-693-418-01	BUTTON, TIMER		29	X-0770-131-0	DOOR ASSY	
15	3-693-419-01	BUTTON, NEXT					

5-2. TUNER, TIMER AND POWER ASSEMBLIES


85
56
57
BVTP3x6
BVTP3x8
63
64
55
BVTP3x14
61
54
BVTP3x6
BVTP
3x6
60
BVTP3x8
66
65
BVTP3x6
53
BVTP3x6
58
BVTP
3x6
BVTP3x6
51
62
BVTP3x6
59
BVTP3x6
84
83
52
85
82
BVTP3x6
77
81
86
BVTP3x6
72
76
69
BVTP3x6
73
70
BVTP
3x6
80
71
67
79
76
74
75
78
BVTP3x6
BVTP3x6
BVTP3x6
68

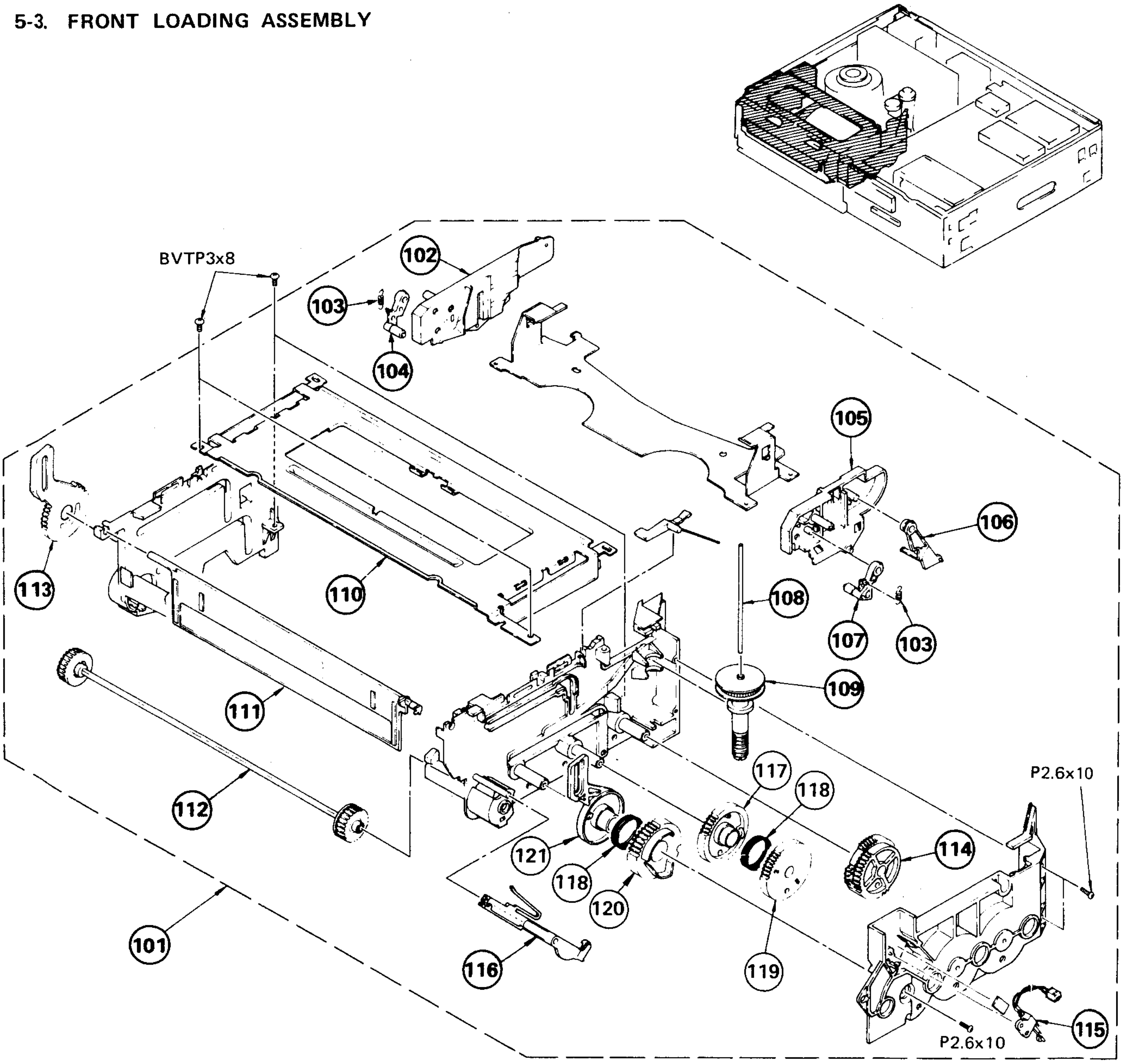
The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

No.	Part No.	Description	Remark
51	*A-6711-606-A	RP-28 BOARD, COMPLETE	52, 53
52	*X-3684-338-1	CASE (UPPER) ASSY, SHIELD RP	
53	*3-684-369-01	CASE (LOWER), SHIELD, RP	
54	*A-6723-268-A	PS-39 BOARD, COMPLETE(US, CANADIAN MODEL)	
	*A-6723-279-A	PS-39 BOARD, COMPLETE(PX MODEL)	
55	⚠1-448-153-11	TRANSFORMER, POWER (US, CANADIAN MODEL)	
	⚠1-448-186-11	TRANSFORMER, POWER (PX MODEL)	
56	3-684-366-11	SCREW (M3X6) (G), WH TAPPING	
57	*1-612-789-11	PS-40 BOARD	
58	⚠1-526-882-00	OUTLET, AC	
59	*1-612-791-11	PS-42 BOARD	
60	*1-612-790-11	PS-41 BOARD	
61	⚠1-557-480-11	CORD, POWER (US, CANADIAN MODEL)	
	⚠1-551-331-21	CORD, POWER (PX MODEL)	
62	⚠2-231-019-00	CLAMPER, CORD	
63	*X-3693-405-1	PANEL ASSY, PRESET	
64	*3-684-367-01	HINGE, PCB	
65	3-684-302-01	KNOB (P3), SLIDE	
66	*A-6721-231-A	TU-76 BOARD, COMPLETE	
67	*A-6715-253-A	SS-32 BOARD, COMPLETE	
68	*3-682-081-00	HOLDER, PCB	

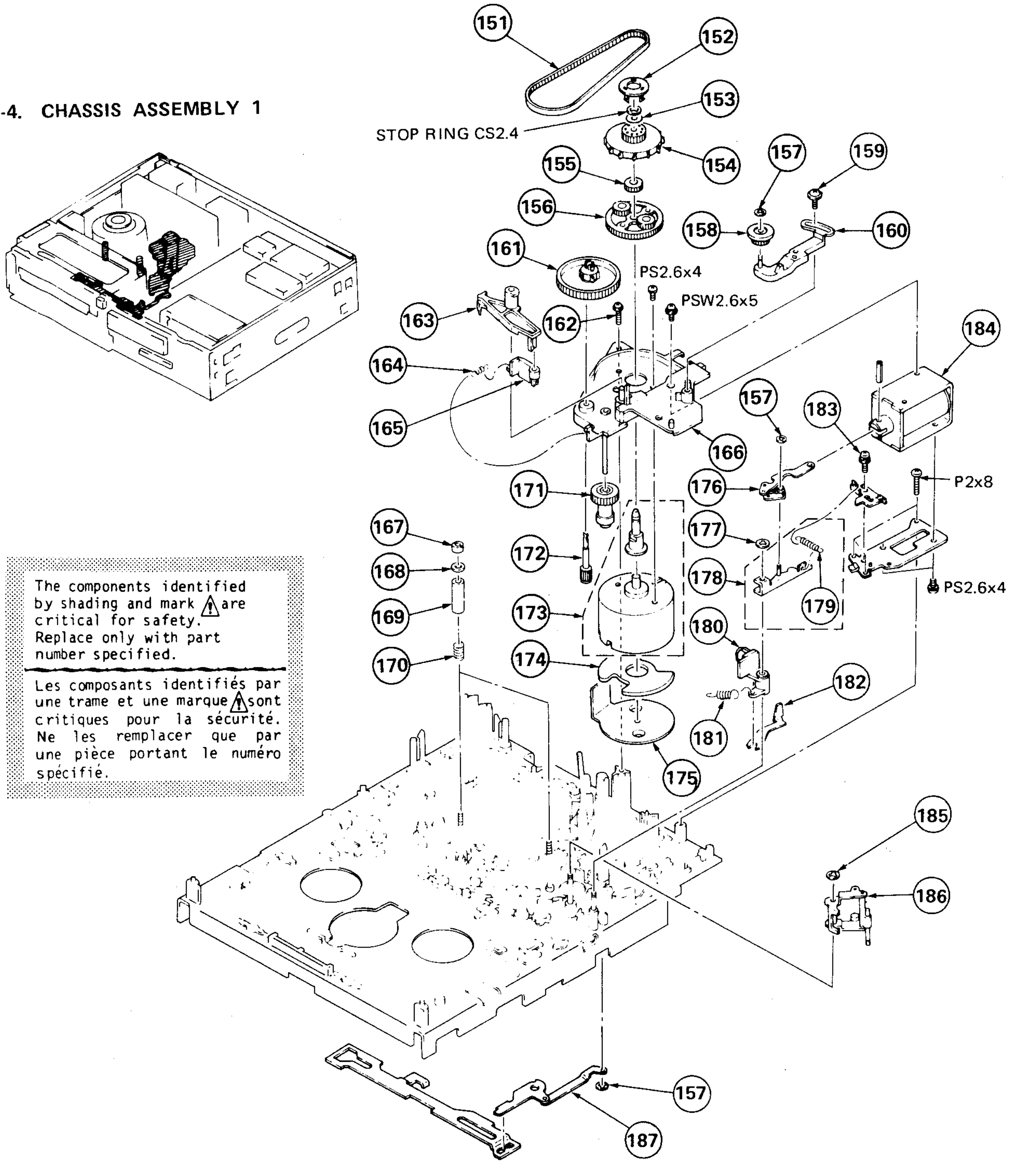
No.	Part No.	Description	Remark
69	3-693-410-01	KNOB, TRACK CONTROL	
70	3-693-409-01	BUTTON (A), SLIDE	
71	3-693-426-01	KNOB, KG	
72	*A-6717-395-B	FU-38 BOARD, COMPLETE	
73	3-693-411-01	KNOB, SHARPNESS	
74	*3-693-427-01	BUTTON (B), SLIDE	
75	*A-6725-436-A	TM-81 BOARD, COMPLETE	
76	3-670-155-11	LEG	
77	*A-6711-607-A	VI-11 BOARD, COMPLETE	
78	*A-6721-233-A	MP-7 BOAR, COMPLETE	
79	*A-6713-225-A	AU-8 BOARD, COMPLETE	
80	⚠1-554-842-11	SWITCH, ANTENNA CHANGE	
81	3-684-354-02	PANEL, REAR (US, CANADIAN MODEL)	
	3-685-224-01	PANEL, REAR (PX MODEL)	
82	*3-693-435-01	LABEL, MODEL NUMBER (U) (US MODEL)	
	*3-693-436-01	LABEL, MODEL NUMBER (U) (CANADIAN MODEL)	
	*3-693-437-01	LABEL, MODEL NUMBER (U) (PX MODEL)	
83	3-682-691-00	NUT, WASHER HEXAGON	
84	3-693-416-01	PANEL, REAR SUB	
85	*3-703-044-26	LABEL CAUTION	
86	⚠1-554-933-11	SELECTOR, VOLTAGE (PX MODEL)	

5-3. FRONT LOADING ASSEMBLY


BVTP3x8
102
103
104
105
106
108
107
103
113
110
111
109
112
117
118
P2.6x10
121
118
114
120
101
116
119
P2.6x10
115

No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
101	A-6751-241-A	THREADING BLOCK ASSY, FRONT	102-121	112	X-3684-116-1	SHAFT ASSY, MIDWAY GEAR	
102	*X-3684-117-1	PLATE ASSY, SIDE, BASE (LEFT)		113	*3-684-166-01	ARM (LEFT), DRIVING	
103	3-684-258-01	SPRING, TENSION		114	X-3684-123-1	GEAR ASSY, DRIVING	
104	X-3684-125-1	RETAINER (LEFT) ASSY, CASSETTE		115	1-554-840-11	SWITCH, LEAF (CASSETTE ON) (S904)	
105	*X-3684-118-1	PLATE ASSY, SIDE, RIGHT		116	3-693-854-01	ARM, SWITCHING, DOOR	
106	*3-684-108-01	ARM, LID OPEN		117	3-684-111-01	GEAR (B), LIMITER	
107	X-3684-124-1	RETAINER (RIGHT) ASSY, CASSETTE		118	3-684-115-01	SPRING	
108	3-679-123-00	SHAFT, GEAR, WORM		119	3-684-109-01	GEAR (A), LIMITER	
109	3-684-164-01	GEAR, WORM		120	3-684-163-01	GEAR, DRIVING ARM	
110	*3-684-195-01	PLATE, TOP		121	3-684-165-01	ARM (RIGHT), DRIVING	
111	X-3691-652-3	DOOR ASSY					

5-4. CHASSIS ASSEMBLY 1

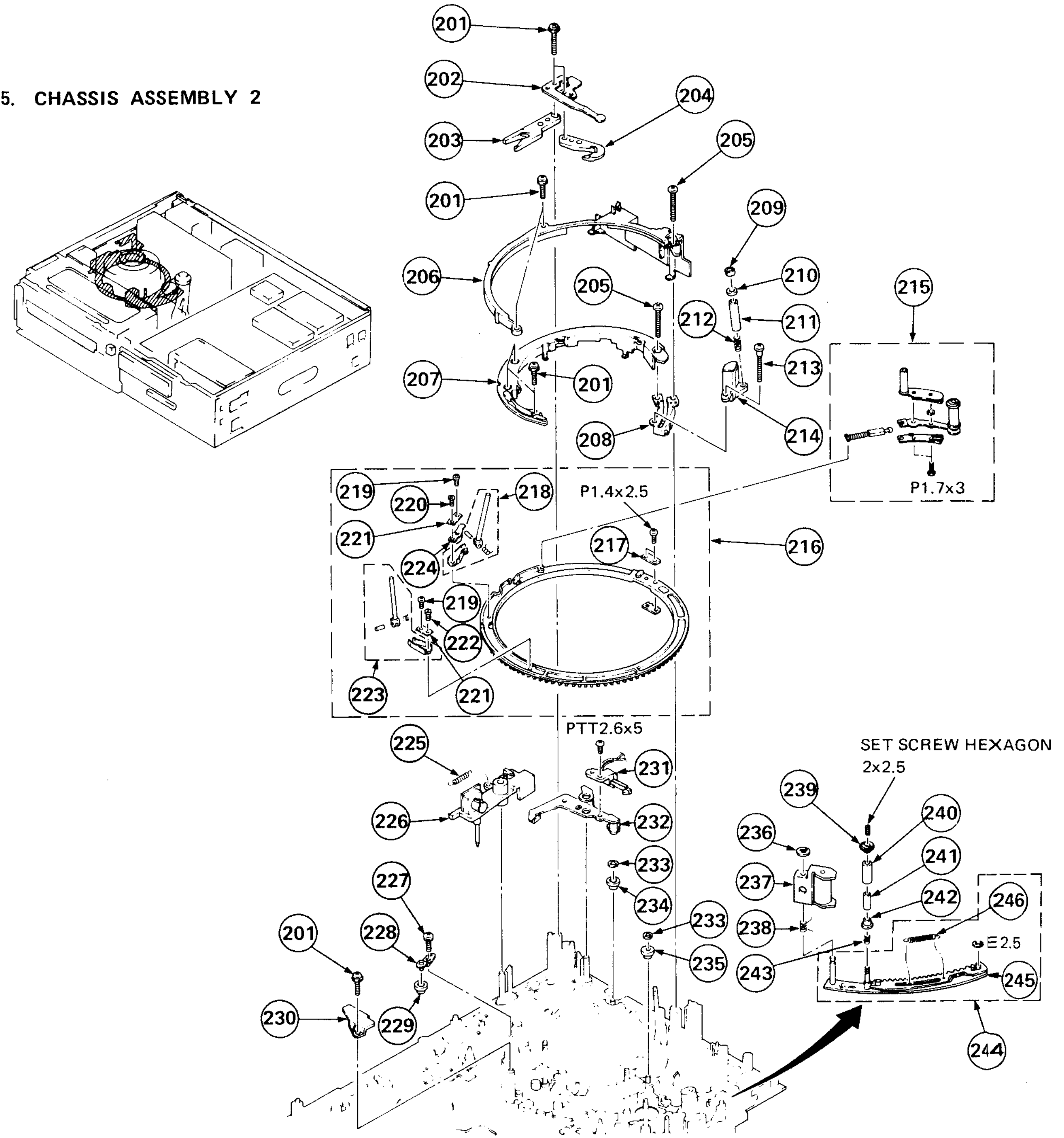

151
152
153
STOP RING CS2.4
154
155
156
157
158
159
160
161
PS2.6x4
PSW2.6x5
162
163
164
165
166
157
183
184
P2x8
171
176
167
177
168
172
178
PS2.6x4
169
173
179
180
170
174
182
181
175
185
186
157
187

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

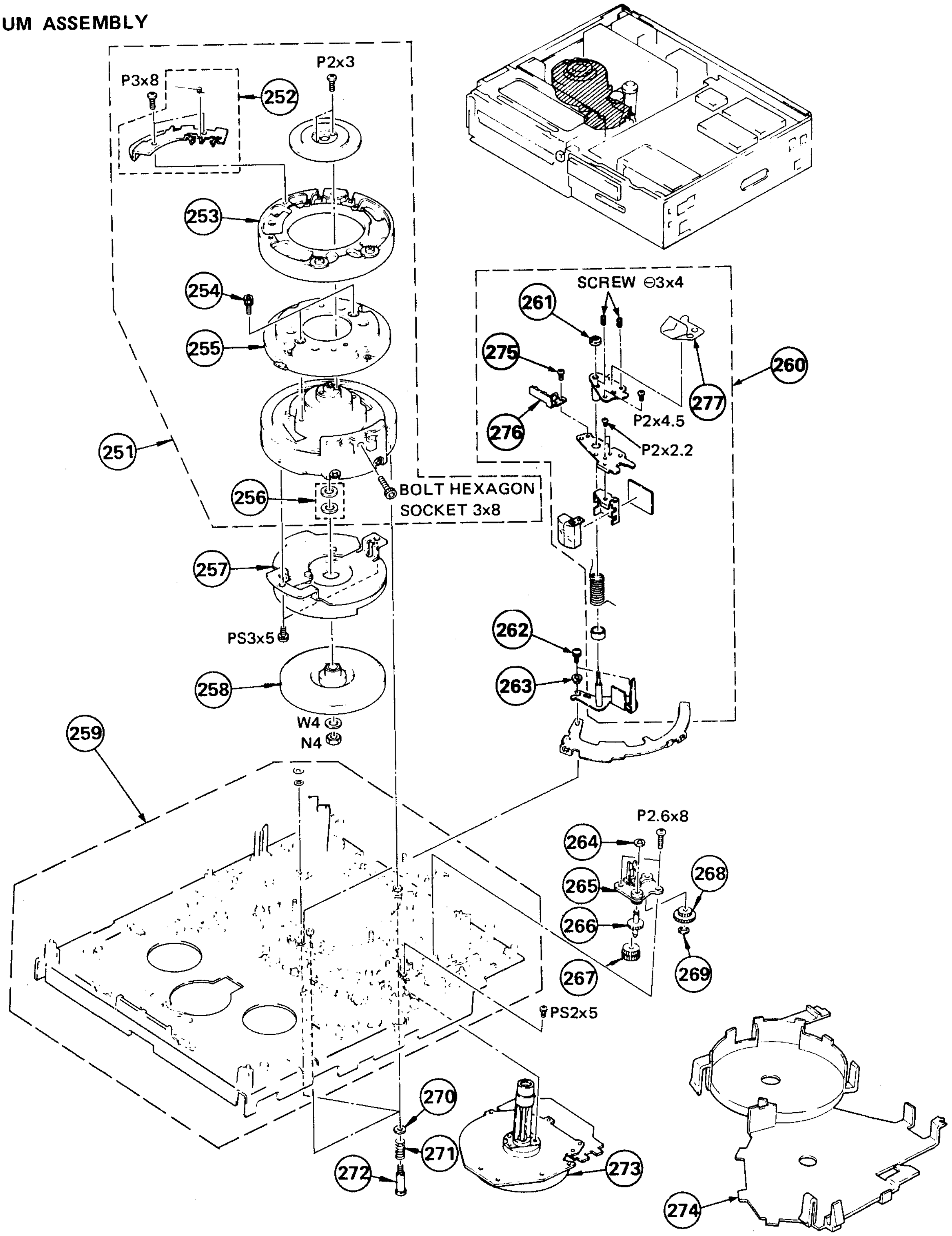
No.	Part No.	Description	Remark
151	3-684-264-01	BELT, TIMING	
152	3-684-152-01	FLANGE, INTERNAL GEAR	
153	3-683-454-01	WASHER, POLYETHYLENE	
154	3-684-178-01	GEAR, INTERNAL	
155	3-679-104-05	GEAR	
156	X-3679-111-0	CARRIER ASSY	
157	3-669-465-00	WASHER (1.5), STOPPER	
158	3-684-151-01	GEAR	
159	3-681-231-00	SCREW (+PW 2.6X8), TAPPING	
160	X-3684-119-1	ARM ASSY, GEAR	
161	3-679-115-00	GEAR (LARGE), LOADING	
162	3-669-480-11	+ PTPWH 2	
163	3-684-167-01	ARM, STOPPER	
164	3-684-227-01	SPRING, TENSION	
165	3-684-116-01	LIMITER, STOPPER	
166	X-3684-129-1	CHASSIS ASSY, PLANET GEAR	
167	3-669-318-21	NUT, ADJUSTMENT, GUIDE	
168	3-684-135-01	WASHER (UPPER), GUIDE, NO. 7, 8	
169	3-684-133-01	SLEEVE, GUIDE, NO. 7, 8	
170	3-684-290-01	SPRING, COMPRESSION	
171	X-3669-321-0	GEAR (C) ASSY	
172	3-679-114-00	GEAR (SMALL), LOADING	
173	X-3679-268-1	MOTOR ASSY, L	
174	*1-605-071-00	LM-16 BOARD	
175	*3-669-613-00	INSULATOR, L MOTOR	
176	X-3684-109-1	ARM ASSY, PINCH SOLENOID	
177	3-669-595-00	WASHER (2), STOPPER	
178	*X-3684-112-1	ARM ASSY, PINCH LIMITER	179
179	3-515-170-00	SPRING, TENSION	
180	1-464-491-31	T COIL SENSOR (L902)	
181	3-684-157-04	SPRING (T SENSOR), TENSION	
182	*3-684-119-01	LINK, TAKE-UP SENSOR	
183	3-669-607-00	+PSW (SMALL ROUND) 2.6	
184	⚠1-454-349-51	SOLENOID PLUNGER (PINCH) (PM901)	
185	3-669-596-00	WASHER (2.3), STOPPER	
186	X-3684-113-1	ARM ASSY, PINCH PRESS	
187	*X-3684-114-1	LEVER ASSY, COMMUNICATION	

5-5. CHASSIS ASSEMBLY 2


201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
P1.4x2.5
P1.7x3
PTT2.6x5
SET SCREW HEXAGON
2x2.5
E2.5

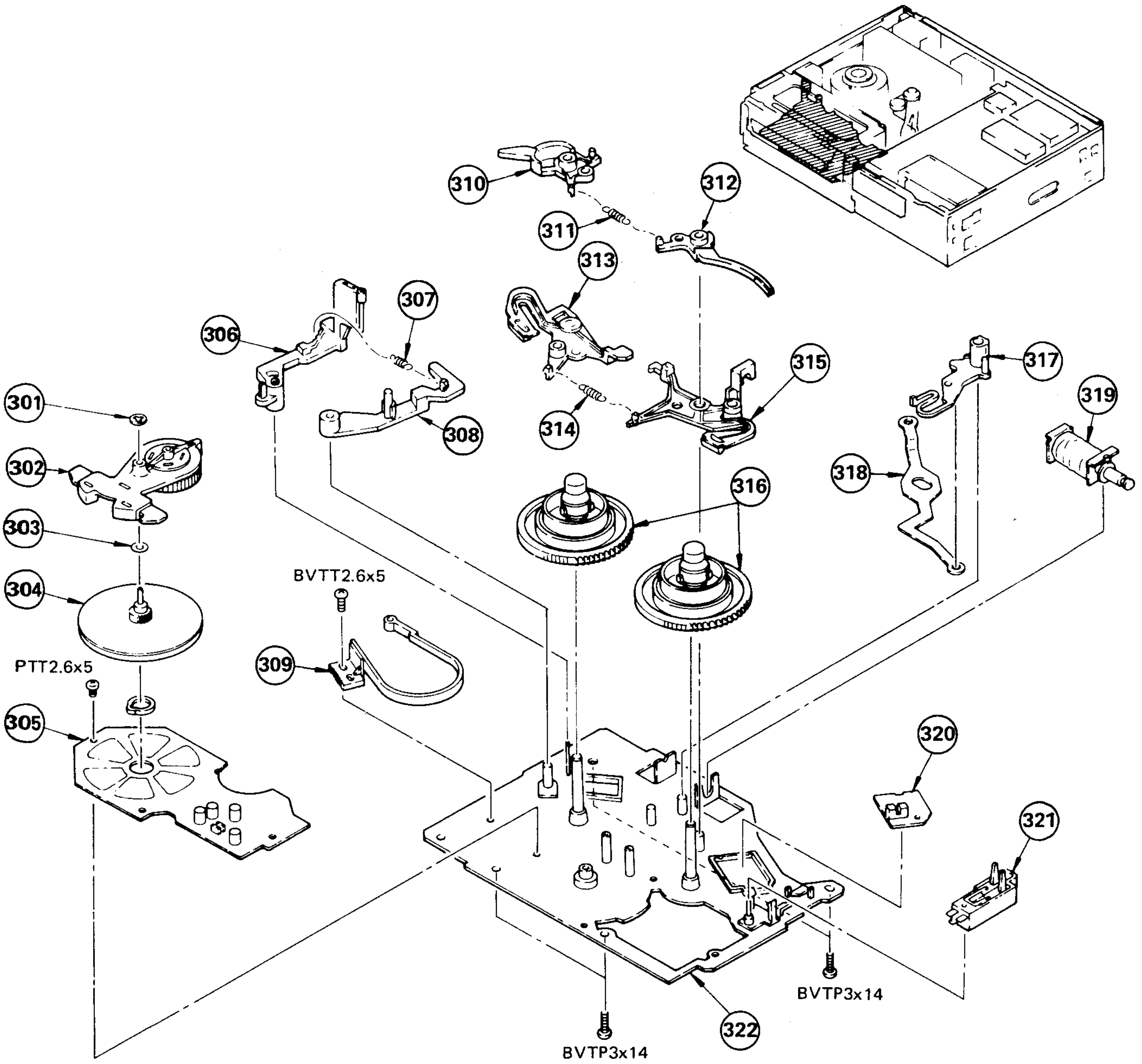
No.	Part No.	Description	Remark
201	3-669-480-11	+ PTPWH 2	
202	*3-684-158-01	PLATE, GROUND, TAPE GUIDE	
203	*3-669-618-00	PLATE (2), ADJUST	
204	*3-672-507-00	PLATE (3-1), ADJUSTMENT	
205	3-669-466-21	SCREW (M 2.6)	
206	3-684-217-04	GUIDE (2), SHUTTLE	
207	*3-679-290-00	GUIDE (1-YA), SHUTTLE	
208	*X-3679-263-1	BASE ASSY, SLANT	
209	3-669-446-00	NUT, GUIDE, NO. 6	
210	3-679-910-00	FLANGE (S), GUIDE, NUMBER 6	
211	3-669-445-00	SPACER, GUIDE, NO. 6	
212	3-669-615-00	SPRING, COMPRESSION	
213	3-669-606-00	SCREW (2.6)	
214	8-825-508-10	HEAD, FE	
215	A-6750-158-B	SHUTTLE (2) BLOCK ASSY	
216	X-3684-178-1	RING (CF) ASSY, THREADING, S	217-224
217	*3-669-616-00	RETAINER	
218	*X-3669-430-0	HOLDER BLOCK ASSY, NO. 3 GUIDE	
219	3-669-478-00	SCREW (1X3), TAPPING	
220	3-669-479-11	SCREW (1.4X3.5), TAPPING	
221	*3-669-472-02	RETAINER, SPRING, LEAF	
222	3-672-586-00	SCREW (1.4X3), TAPPING	
223	*X-3669-429-0	HOLDER BLOCK ASSY, NO. 2 GUIDE	
224	3-672-583-00	SPRING	
225	3-684-161-01	SPRING (S SENSOR), TENSION	
226	1-464-503-31	S COIL SENSOR (L901)	
227	3-669-607-31	+PSW (SMALL ROUND) (2.6)	
228	*X-3669-329-0	PLATE ASSY, ADJUSTMENT	
229	3-669-360-00	ROLLER, RING	
230	3-669-476-04	PLATE, GUIDE	
231	1-554-840-11	SWITCH, LEAF (LOAD END) (S903)	
232	*X-3684-130-1	ARM ASSY, LOCK	
233	3-669-465-00	WASHER (1.5), STOPPER	
234	3-669-630-00	ROLLER (C), RING	
235	3-669-597-00	ROLLER (B), RING	
236	3-669-596-00	WASHER (2.3), STOPPER	
237	X-3684-337-1	ARM ASSY (B), PINCH ROLLER	
238	3-683-441-01	SPRING	
239	3-676-650-00	FLANGE (UPPER) (NO. 9), GUIDE	
240	3-676-649-11	ROLLER (NO. 9), GUIDE	
241	3-672-559-00	SLEEVE, GUIDE	
242	3-672-558-00	FLANGE (LOWER) (NO. 9), GUIDE	
243	3-669-452-00	SPRING, COMPRESSION	
244	A-6750-165-A	GEAR ASSY SLIDER	245, 246
245	*X-3679-265-1	SLIDER ASSY (2), T	
246	3-549-014-00	SPRING, TENSION	

5-6. DRUM ASSEMBLY


P3x8
252
P2x3
253
254
255
251
256
BOLT HEXAGON
SOCKET 3x8
257
PS3x5
258
W4
N4
259
SCREW ⊖3x4
261
275
277
260
276
P2x4.5
P2x2.2
262
263
P2.6x8
264
265
268
266
267
269
PS2x5
270
271
272
273
274

No.	Part No.	Description	Remark
251	A-6050-259-A	DRUM ASSY (DSH-50A-R)	252-256
252	A-6760-066-B	SPRING ASSY, TAPE RETAINER	
253	A-6760-138-A	DRUM ASSY, UPPER	
254	3-669-157-00	BOLT (WASHER) (2.6X8)	
255	A-6762-177-A	DISK ASSY (DSR-50-R)	
256	X-3669-105-0	SPACER BLOCK ASSY	
257	X-2621-210-2	STATOR ASSY, D	
258	X-2621-202-0	ROTOR ASSY, D	
259	*X-3684-134-4	CHASSIS ASSY, MECHANICAL	
260	A-6761-099-A	AC ASSY	
261	*3-684-246-02	NUT, ADJUSTMENT, HEIGHT, ACE	261, 275-277
262	3-693-439-01	SCREW (P2.6X12), (+)	
263	3-684-247-01	BUSHING, ACE	
264	3-669-595-00	WASHER (2), STOPPER	
265	X-3679-147-0	CHASSIS (B) ASSY, DRIVE GEAR	
266	X-3679-148-0	GEAR (F) ASSY (D)	
267	3-669-338-00	GEAR (E)	
268	3-669-337-00	GEAR (D)	
269	3-669-465-00	WASHER (1.5), STOPPER	
270	3-669-600-11	WASHER, FLAT (3.5)	
271	3-429-123-00	SPRING	
272	3-669-302-00	SCREW, FITTING	
273	8-838-071-01	CAPSTAN MOTOR, DC (BHF-1909C) (CAPSTAN MOTOR)	(M902)
274	3-684-382-01	PROTECTOR (B)	
275	3-693-439-11	SCREW (P2.6x5), (+)	
276	3-693-895-01	PROTECTOR (S)	
277	3-693-904-01	SHEET (P), INSULATING	

5-7. REEL BASE ASSEMBLY



No.	Part No.	Description	Remark
301	3-669-595-00	WASHER (2), STOPPER	
302	A-6759-074-A	ARM BLOCK ASSY, PENDULUM	
303	3-679-318-00	WASHER, PENDULUM ARM	
304	X-2622-201-0	ROTOR ASSY, R	
305	A-4910-021-B	R STATOR (REEL MOTOR) BOARD, COMPLETE (M902)	
306	X-3684-121-1	LEVER ASSY, TENSION REGULATOR	
307	3-679-151-00	SPRING, TENSION	
308	3-684-211-01	LEVER, FUNCTION	
309	X-3679-120-0	BAND ASSY, TENSION REGULATOR	
310	3-684-192-01	ARM, BRAKE, SUPPLY SOFT	
311	3-684-235-01	SPRING, TENSION	
312	X-3684-137-1	BRAKE ASSY, T SOFT	
313	X-3684-107-1	BRAKE ASSY, SUPPLY	
314	3-685-772-01	SPRING, TENSION	
315	X-3684-108-1	BRAKE ASSY, TAKE-UP	
316	X-3684-106-1	TABLE ASSY, REEL	
317	3-684-193-01	ARM, PENDULUM STOPPER	
318	*3-684-183-01	LINK, L	
319	⚠1-454-371-11	SOLENOID PLUNGER (BRAKE) (PM902)	
320	*1-612-509-11	MI-4 BOARD	
321	1-554-839-11	SWITCH, LEAF (2 GANG) (CASSETE DOWN/REC PROOF)(S901, 902)	
322	*X-3684-131-1	CHASSIS ASSY, SUB	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

5-8. HARDWARE LIST

SCREW

7-621-773-86	SCREW +B 2.6X4
7-627-552-38	SCREW, PRECISION +P 1.7X3
7-627-553-58	SCREW, PRECISION +P 2x4.5
7-627-554-07	SCREW, PRECISION +P 2X2.2
7-628-253-15	SCREW +PS 2X5
7-628-253-95	SCREW +PS 2.6X4
7-685-134-14	SCREW +P 2.6X8 TYPE2 NON-SLIT
7-685-135-14	SCREW +P 2.6X10 TYPE2 NON-SLIT
7-685-645-71	SCREW +BVTP 3X6 TYPE2 IT-3
7-685-645-81	SCREW +BVTP 3X6 TYPE2
7-685-646-71	SCREW +BVTP 3X8 TYPE2 IT-3
7-685-646-81	SCREW +BVTP 3X8 TYPE2
7-685-649-14	SCREW +BVTP 3X14 TYPE2 N-S
7-685-790-04	SCREW +PTT 2.6X4 (S)
7-685-791-04	SCREW +PTT 2.6X5 (S)
7-685-861-01	SCREW +BVTT 2.6x5 (S)

SET-SCREW

7-621-732-08	SET-SCT, HEX. 2X3 FLAT POINT
7-683-174-21	SET-SCREW, SLOT 3X4 CONE POINT
7-627-553-38	SCREW, PRECISION +P 2x3
7-682-148-01	SCREW +P 3x8
7-682-646-01	SCREW +PS 3x5

RING

7-624-118-01	RING, RETAINING E-2.5
7-624-190-61	STOP RING 2.4, TYPE-CS

TAPPING

7-685-105-14	TPG +P 2X8, TYPE 2, NON-SLIT

NUT

7-684-024-04	N4, TYPE 2

WASHER

7-688-004-11	W4, MIDDLE

R STATOR **RP-28**

SECTION 6

ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS

- All resistors are in ohms
- F : nonflammable

COILS

- MMH : mH, UH : μH

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

CAPACITORS

- MF : μF, PF : μμF

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
	*A-4910-021-B	R STATOR (REEL MOTOR) BOARD, COMPLETE **************************************			
	*1-560-460-00	PIN, CONNECTOR 4P			
		CAPACITOR			
C1	1-123-821-00	ELECT	47MF	20%	16V
C2	1-123-821-00	ELECT	47MF	20%	16V
C3	1-123-821-00	ELECT	47MF	20%	16V
C4	1-123-821-00	ELECT	47MF	20%	16V
		DIODE			
D1	8-719-941-48	DIODE 1N4148TP			
		IC			
IC1	8-759-108-77	IC CX-877			
		TRANSISTOR			
Q1	8-729-100-01	2SD992-N			
Q2	8-729-100-01	TRANSISTOR 2SD992-N			
Q3	8-729-100-01	TRANSISTOR 2SD992-N			
Q4	8-729-100-01	TRANSISTOR 2SD992-N			
Q5	8-729-100-01	TRANSISTOR 2SD992-N			
Q6	8-729-100-01	TRANSISTOR 2SD992-N			
		RESISTOR			
R1	1-247-823-00	CARBON	470	5%	1/6W
R2	1-247-823-00	CARBON	470	5%	1/6W
R3	1-247-823-00	CARBON	470	5%	1/6W
R4	1-247-829-00	CARBON	820	5%	1/6W
R5	1-247-871-00	CARBON	47K	5%	1/6W
R6	1-247-871-00	CARBON	47K	5%	1/6W
R7	1-247-871-00	CARBON	47K	5%	1/6W
R8	1-247-871-00	CARBON	47K	5%	1/6W
		DIODE			
S1	8-719-810-31	DIODE THS103-1			
S2	8-719-810-31	DIODE THS103-1			

****

Ref.No	Part No.	Description			Remark
	*A-6711-606-A	RP-28 BOARD, COMPLETE **********************			
	*3-684-368-02	CASE (UPPER), SHIELD, RP			
	*3-684-369-01	CASE (LOWER), SHIELD, RP			
	*3-684-370-01	CASE (MAIN), SHIELD, RP			
	*3-685-202-01	PLATE, SHIELD, RP INTERNAL			
		CAPACITOR			
C001	1-101-004-00	CERAMIC	0.01MF		50V
C003	1-101-004-00	CERAMIC	0.01MF		50V
C008	1-101-004-00	CERAMIC	0.01MF		50V
C009	1-101-004-00	CERAMIC	0.01MF		50V

Ref.No	Part No.	Description			Remark
C010	1-123-318-00	ELECT	33MF	20%	16V
C011	1-101-004-00	CERAMIC	0.01MF		50V
C012	1-123-306-00	ELECT	47MF	20%	10V
C014	1-102-958-00	CERAMIC	20PF	5%	50V
C015	1-123-306-00	ELECT	47MF	20%	10V
C016	1-101-004-00	CERAMIC	0.01MF		50V
C017	1-102-953-00	CERAMIC	18PF	5%	50V
C019	1-101-004-00	CERAMIC	0.01MF		50V
C020	1-101-004-00	CERAMIC	0.01MF		50V
C021	1-123-306-00	ELECT	47MF	20%	10V
C022	1-101-004-00	CERAMIC	0.01MF		50V
C023	1-123-379-00	ELECT	0.47MF	20%	50V
C024	1-123-306-00	ELECT	47MF	20%	10V
C028	1-123-306-00	ELECT	47MF	20%	10V
C029	1-101-004-00	CERAMIC	0.01MF		50V
C030	1-161-039-00	CERAMIC	0.001MF	10%	25V
C031	1-123-318-00	ELECT	33MF	20%	16V
C032	1-101-004-00	CERAMIC	0.01MF		50V
C033	1-123-379-00	ELECT	0.47MF	20%	50V
C034	1-101-004-00	CERAMIC	0.01MF		50V
C035	1-123-306-00	ELECT	47MF	20%	10V
C036	1-161-039-00	CERAMIC	0.001MF	10%	25V
C037	1-101-004-00	CERAMIC	0.01MF		50V
C038	1-101-004-00	CERAMIC	0.01MF		50V
C039	1-123-306-00	ELECT	47MF	20%	10V
C040	1-101-004-00	CERAMIC	0.01MF		50V
C041	1-101-004-00	CERAMIC	0.01MF		50V
C043	1-102-978-00	CERAMIC	220PF	5%	50V
		CONNECTOR			
CN001	*1-508-736-00	PIN, CONNECTOR 10P			
CN002	*1-564-027-00	PIN, CONNECTOR 2P			
CN003	*1-560-894-00	PIN, CONNECTOR 6P			
CN004	*1-564-030-00	PIN, CONNECTOR 5P			
CN005	*1-560-896-00	PIN, CONNECTOR 8P			
		DIODE			
D001	8-719-911-19	DIODE 1SS119			
D002	8-719-911-19	DIODE 1SS119			
		IC			
IC001	8-752-004-50	IC CX20045			
		COIL			
L002	1-408-421-00	MICRO INDUCTOR 100UH			
L003	1-408-411-00	MICRO INDUCTOR 15UH			
L004	1-408-411-00	MICRO INDUCTOR 15UH			
L007	1-408-600-00	MICRO INDUCTOR 5.6UH			
L008	1-408-877-00	MICRO INDUCTOR 0.22UH			
L009	1-410-175-11	MICRO INDUCTOR 330UH			
L010	1-408-877-00	MICRO INDUCTOR 0.22UH			
L011	1-410-175-11	MICRO INDUCTOR 330UH			
L012	1-408-600-00	MICRO INDUCTOR 5.6UH			

RP-28 VI-11

Ref.No	Part No.	Description				Remark
L013	1-408-421-00	MICRO INDUCTOR 100UH				
L014	1-408-421-00	MICRO INDUCTOR 100UH				
L015	1-408-421-00	MICRO INDUCTOR 100UH				

TRANSISTOR

Ref.No	Part No.	Description				Remark
Q003 ⚠	8-729-245-83	TRANSISTOR 2SC2458				
Q006	8-729-901-57	TRANSISTOR DTC143XS				

RESISTOR

Ref.No	Part No.	Description				Remark
R001	1-247-815-00	CARBON	220	5%	1/6W	
R002	1-247-815-00	CARBON	220	5%	1/6W	
R009	1-247-807-00	CARBON	100	5%	1/6W	
R010	1-247-855-00	CARBON	10K	5%	1/6W	
R011	1-247-823-00	CARBON	470	5%	1/6W	
R012	1-247-827-00	CARBON	680	5%	1/6W	
R015 ⚠	1-247-696-11	CARBON	47	5%	1/4W	F
R016	1-247-826-00	CARBON	620	5%	1/6W	
R017	1-247-799-00	CARBON	47	5%	1/6W	
R018	1-247-799-00	CARBON	47	5%	1/6W	
R019	1-247-826-00	CARBON	620	5%	1/6W	
R020	1-247-831-00	CARBON	1K	5%	1/6W	
R023	1-247-831-00	CARBON	1K	5%	1/6W	
R025	1-247-821-00	CARBON	390	5%	1/6W	
R026	1-247-827-00	CARBON	680	5%	1/6W	
R027	1-247-831-00	CARBON	1K	5%	1/6W	
R028	1-247-831-00	CARBON	1K	5%	1/6W	
R029	1-247-827-00	CARBON	680	5%	1/6W	
R030	1-247-821-00	CARBON	390	5%	1/6W	
R032	1-247-857-00	CARBON	12K	5%	1/6W	
R034	1-247-831-00	CARBON	1K	5%	1/6W	

VARIABLE RESISTOR

Ref.No	Part No.	Description				Remark
RV002	1-228-921-00	RES, ADJ, CARBON 4.7K				
RV003	1-228-921-00	RES, ADJ, CARBON 4.7K				

RELAY

Ref.No	Part No.	Description				Remark
RY001	1-515-529-11	RELAY				

****

*A-6711-607-A VI-11 BOARD, COMPLETE
****

CAPACITOR

Ref.No	Part No.	Description				Remark
C101	1-123-306-00	ELECT	47MF	20%	10V	
C102	1-102-961-00	CERAMIC	27PF	5%	50V	
C103	1-102-963-00	CERAMIC	33PF	5%	50V	
C104	1-102-952-00	CERAMIC	16PF	5%	50V	
C105	1-101-888-00	CERAMIC	68PF	5%	50V	
C106	1-123-306-00	ELECT	47MF	20%	10V	
C107	1-123-356-00	ELECT	10MF	20%	16V	
C108	1-102-953-00	CERAMIC	18PF	5%	50V	
C109	1-102-965-00	CERAMIC	39PF	5%	50V	
C110	1-102-965-00	CERAMIC	39PF	5%	50V	
C111	1-102-947-00	CERAMIC	10PF	5%	50V	
C112	1-123-306-00	ELECT	47MF	20%	10V	
C113	1-123-306-00	ELECT	47MF	20%	10V	
C114	1-101-004-00	CERAMIC	0.01MF		50V	
C115	1-101-004-00	CERAMIC	0.01MF		50V	
C116	1-101-004-00	CERAMIC	0.01MF		50V	
C117	1-101-004-00	CERAMIC	0.01MF		50V	
C118	1-102-820-00	CERAMIC	330PF	5%	50V	
C119	1-102-973-00	CERAMIC	100PF	5%	50V	
C120	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C121	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C122	1-102-116-00	CERAMIC	680PF	10%	50V	
C123	1-101-004-00	CERAMIC	0.01MF		50V	
C124	1-101-004-00	CERAMIC	0.01MF		50V	
C125	1-101-004-00	CERAMIC	0.01MF		50V	
C126	1-101-004-00	CERAMIC	0.01MF		50V	
C127	1-123-330-00	ELECT	22MF	20%	16V	
C128	1-102-973-00	CERAMIC	100PF	5%	50V	
C129	1-123-306-00	ELECT	47MF	20%	10V	
C130	1-123-382-00	ELECT	3.3MF	20%	50V	
C131	1-123-380-00	ELECT	1MF	20%	50V	
C132	1-102-816-00	CERAMIC	120PF	5%	50V	
C133	1-123-356-00	ELECT	10MF	20%	16V	
C134	1-101-004-00	CERAMIC	0.01MF		50V	
C135	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C136	1-102-972-00	CERAMIC	91PF	5%	50V	
C137	1-101-004-00	CERAMIC	0.01MF		50V	
C138	1-101-004-00	CERAMIC	0.01MF		50V	
C139	1-123-306-00	ELECT	47MF	20%	10V	
C140	1-101-004-00	CERAMIC	0.01MF		50V	
C141	1-130-485-00	MYLAR	0.015MF	5%	50V	
C142	1-102-973-00	CERAMIC	100PF	5%	50V	
C143	1-101-004-00	CERAMIC	0.01MF		50V	
C144	1-101-004-00	CERAMIC	0.01MF		50V	
C145	1-161-025-00	CERAMIC	0.1MF	10%	25V	
C146	1-101-004-00	CERAMIC	0.01MF		50V	
C147	1-102-959-00	CERAMIC	22PF	5%	50V	
C201	1-101-059-00	CERAMIC	510PF	5%	50V	
C202	1-102-821-00	CERAMIC	360PF	5%	50V	
C203	1-102-976-00	CERAMIC	180PF	5%	50V	
C204	1-123-369-00	ELECT	4.7MF	20%	25V	
C205	1-102-822-00	CERAMIC	390PF	5%	50V	
C206	1-101-059-00	CERAMIC	510PF	5%	50V	
C207	1-102-978-00	CERAMIC	220PF	5%	50V	
C208	1-102-980-00	CERAMIC	270PF	5%	50V	
C209	1-123-356-00	ELECT	10MF	20%	16V	
C210	1-101-004-00	CERAMIC	0.01MF		50V	
C211	1-123-306-00	ELECT	47MF	20%	10V	
C213	1-123-380-00	ELECT	1MF	20%	50V	
C231	1-102-973-00	CERAMIC	100PF	5%	50V	
C232	1-123-369-00	ELECT	4.7MF	20%	25V	
C233	1-123-306-00	ELECT	47MF	20%	10V	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

VI-11

Ref.No	Part No.	Description			Remark
C234	1-123-306-00	ELECT	47MF	20%	10V
C235	1-102-980-00	CERAMIC	270PF	5%	50V
C236	1-130-478-00	MYLAR	0.0039MF	5%	50V
C237	1-102-820-00	CERAMIC	330PF	5%	50V
C238	1-101-880-00	CERAMIC	47PF	5%	50V
C239	1-123-306-00	ELECT	47MF	20%	10V
C240	1-101-004-00	CERAMIC	0.01MF		50V
C241	1-123-306-00	ELECT	47MF	20%	10V
C242	1-102-980-00	CERAMIC	270PF	5%	50V
C243	1-130-471-00	MYLAR	0.001MF	5%	50V
C244	1-101-884-00	CERAMIC	56PF	5%	50V
C245	1-102-973-00	CERAMIC	100PF	5%	50V
C246	1-102-976-00	CERAMIC	180PF	5%	50V
C247	1-123-380-00	ELECT	1MF	20%	50V
C248	1-101-059-00	CERAMIC	510PF	5%	50V
C249	1-123-369-00	ELECT	4.7MF	20%	25V
C250	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C251	1-102-947-00	CERAMIC	10PF	5%	50V
C252	1-102-953-00	CERAMIC	18PF	5%	50V
C253	1-101-004-00	CERAMIC	0.01MF		50V
C254	1-123-380-00	ELECT	1MF	20%	50V
C255	1-102-976-00	CERAMIC	180PF	5%	50V
C301	1-123-330-00	ELECT	22MF	20%	16V
C302	1-123-330-00	ELECT	22MF	20%	16V
C303	1-101-880-00	CERAMIC	47PF	5%	50V
C304	1-102-980-00	CERAMIC	270PF	5%	50V
C305	1-123-330-00	ELECT	22MF	20%	16V
C306	1-123-356-00	ELECT	10MF	20%	16V
C307	1-123-369-00	ELECT	4.7MF	20%	25V
C308	1-123-330-00	ELECT	22MF	20%	16V
C309	1-123-330-00	ELECT	22MF	20%	16V
C310	1-101-884-00	CERAMIC	56PF	5%	50V
C311	1-101-004-00	CERAMIC	0.01MF		50V
C312	1-101-888-00	CERAMIC	68PF	5%	50V
C313	1-102-936-00	CERAMIC	3PF	0.25PF	50V
C314	1-123-306-00	ELECT	47MF	20%	10V
C316	1-101-004-00	CERAMIC	0.01MF		50V
C317	1-101-004-00	CERAMIC	0.01MF		50V
C319	1-101-004-00	CERAMIC	0.01MF		50V
C320	1-123-381-00	ELECT	2.2MF	20%	50V
C321	1-123-381-00	ELECT	2.2MF	20%	50V
C322	1-123-306-00	ELECT	47MF	20%	10V
C323	1-101-004-00	CERAMIC	0.01MF		50V
C324	1-123-356-00	ELECT	10MF	20%	16V
C325	1-123-356-00	ELECT	10MF	20%	16V
C326	1-102-820-00	CERAMIC	330PF	5%	50V
C327	1-101-004-00	CERAMIC	0.01MF		50V
C328	1-102-947-00	CERAMIC	10PF	5%	50V
C329	1-101-004-00	CERAMIC	0.01MF		50V
C330	1-101-004-00	CERAMIC	0.01MF		50V
C331	1-101-004-00	CERAMIC	0.01MF		50V
C332	1-101-004-00	CERAMIC	0.01MF		50V
C401	1-101-004-00	CERAMIC	0.01MF		50V
C402	1-123-380-00	ELECT	1MF	20%	50V
C403	1-123-306-00	ELECT	47MF	20%	10V
C404	1-101-004-00	CERAMIC	0.01MF		50V
C405	1-123-369-00	ELECT	4.7MF	20%	25V
C406	1-101-004-00	CERAMIC	0.01MF		50V
C407	1-123-380-00	ELECT	1MF	20%	50V
C408	1-161-013-00	CERAMIC	0.01MF	10%	25V
C410	1-101-004-00	CERAMIC	0.01MF		50V
C411	1-102-119-00	CERAMIC	0.0015MF	10%	50V
C412	1-102-521-00	CERAMIC	43PF	5%	50V
C413	1-102-119-00	CERAMIC	0.0015MF	10%	50V
C414	1-161-047-00	CERAMIC	0.0047MF	10%	25V
C415	1-123-380-00	ELECT	1MF	20%	50V
C416	1-123-380-00	ELECT	1MF	20%	50V
C417	1-101-004-00	CERAMIC	0.01MF		50V
C418	1-102-815-00	CERAMIC	110PF	5%	50V
C419	1-102-976-00	CERAMIC	180PF	5%	50V
C420	1-101-004-00	CERAMIC	0.01MF		50V
C421	1-101-004-00	CERAMIC	0.01MF		50V
C422	1-123-356-00	ELECT	10MF	20%	16V
C423	1-123-356-00	ELECT	10MF	20%	16V
C424	1-161-024-00	CERAMIC	0.082MF	10%	25V
C425	1-123-380-00	ELECT	1MF	20%	50V
C426	1-102-516-00	CERAMIC	27PF	5%	50V
C427	1-101-888-00	CERAMIC	68PF	5%	50V
C428	1-101-004-00	CERAMIC	0.01MF		50V
C429	1-102-971-00	CERAMIC	82PF	5%	50V
C430	1-101-004-00	CERAMIC	0.01MF		50V
C431	1-123-369-00	ELECT	4.7MF	20%	25V
C432	1-101-004-00	CERAMIC	0.01MF		50V
C433	1-123-306-00	ELECT	47MF	20%	10V
C434	1-101-004-00	CERAMIC	0.01MF		50V
C435	1-123-306-00	ELECT	47MF	20%	10V
C436	1-101-004-00	CERAMIC	0.01MF		50V
C437	1-161-059-00	CERAMIC	0.047MF	10%	25V
C438	1-102-973-00	CERAMIC	100PF	5%	50V
C439	1-101-880-00	CERAMIC	47PF	5%	50V
C440	1-102-978-00	CERAMIC	220PF	5%	50V
C441	1-101-004-00	CERAMIC	0.01MF		50V
C442	1-102-966-00	CERAMIC	43PF	5%	50V
C443	1-101-081-00	CERAMIC	130PF	5%	50V
C444	1-102-966-00	CERAMIC	43PF	5%	50V
C445	1-101-004-00	CERAMIC	0.01MF		50V
C447	1-101-004-00	CERAMIC	0.01MF		50V
C448	1-123-356-00	ELECT	10MF	20%	16V
C502	1-101-004-00	CERAMIC	0.01MF		50V
C503	1-127-460-00	ELECT(SOLID)	1MF	20%	25V
C504	1-127-460-00	ELECT(SOLID)	1MF	20%	25V
C505	1-123-356-00	ELECT	10MF	20%	16V
C506	1-127-460-00	ELECT(SOLID)	1MF	20%	25V
C507	1-123-306-00	ELECT	47MF	20%	10V
C508	1-102-816-00	CERAMIC	120PF	5%	50V
C509	1-102-980-00	CERAMIC	270PF	5%	50V

When indicating parts by reference number, please include the board name.

VI-11

Ref.No	Part No.	Description			Remark
C510	1-101-004-00	CERAMIC	0.01MF		50V
C511	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C512	1-123-369-00	ELECT	4.7MF	20%	25V
C513	1-101-004-00	CERAMIC	0.01MF		50V
C514	1-101-004-00	CERAMIC	0.01MF		50V
C515	1-101-004-00	CERAMIC	0.01MF		50V
C516	1-101-004-00	CERAMIC	0.01MF		50V
C517	1-161-059-00	CERAMIC	0.047MF	10%	25V
C518	1-123-381-00	ELECT	2.2MF	20%	50V
C519	1-123-306-00	ELECT	47MF	20%	10V
C520	1-101-004-00	CERAMIC	0.01MF		50V
C521	1-123-379-00	ELECT	0.47MF	20%	50V
C522	1-161-013-00	CERAMIC	0.01MF	10%	25V
C523	1-101-004-00	CERAMIC	0.01MF		50V
C524	1-161-025-00	CERAMIC	0.1MF	10%	25V
C525	1-102-074-00	CERAMIC	0.001MF	10%	50V
C526	1-161-025-00	CERAMIC	0.1MF	10%	25V
C527	1-101-004-00	CERAMIC	0.01MF		50V
C528	1-123-306-00	ELECT	47MF	20%	10V
C529	1-101-004-00	CERAMIC	0.01MF		50V
C530	1-161-059-00	CERAMIC	0.047MF	10%	25V
C531	1-102-961-00	CERAMIC	27PF	5%	50V
C532	1-102-961-00	CERAMIC	27PF	5%	50V
C533	1-123-299-00	ELECT	1000MF	20%	6.3V
C535	1-123-306-00	ELECT	47MF	20%	10V
C538	1-123-308-00	ELECT	220MF	20%	10V
C540	1-161-059-00	CERAMIC	0.047MF	10%	25V
C601	1-101-004-00	CERAMIC	0.01MF		50V
C602	1-101-004-00	CERAMIC	0.01MF		50V
C604	1-123-356-00	ELECT	10MF	20%	16V
C701	1-123-306-00	ELECT	47MF	20%	10V
C702	1-101-004-00	CERAMIC	0.01MF		50V
C703	1-101-004-00	CERAMIC	0.01MF		50V
C704	1-102-951-00	CERAMIC	15PF	5%	50V
C705	1-102-964-00	CERAMIC	36PF	5%	50V
C706	1-102-947-00	CERAMIC	10PF	5%	50V
C707	1-101-004-00	CERAMIC	0.01MF		50V
C708	1-102-973-00	CERAMIC	100PF	5%	50V
C709	1-101-004-00	CERAMIC	0.01MF		50V
C710	1-101-888-00	CERAMIC	68PF	5%	50V
C711	1-102-961-00	CERAMIC	27PF	5%	50V
C712	1-102-824-00	CERAMIC	470PF	5%	50V
C713	1-101-004-00	CERAMIC	0.01MF		50V
C714	1-101-004-00	CERAMIC	0.01MF		50V
C802	1-101-890-00	CERAMIC	75PF	5%	50V
C803	1-101-884-00	CERAMIC	56PF	5%	50V
C804	1-102-824-00	CERAMIC	470PF	5%	50V
C805	1-101-004-00	CERAMIC	0.01MF		50V
C806	1-102-944-00	CERAMIC	7PF	0.5PF	50V
C807	1-101-004-00	CERAMIC	0.01MF		50V
C808	1-102-824-00	CERAMIC	470PF	5%	50V
C809	1-102-824-00	CERAMIC	470PF	5%	50V
C810	1-101-004-00	CERAMIC	0.01MF		50V

Ref.No	Part No.	Description			Remark
C811	1-101-004-00	CERAMIC	0.01MF		50V
C812	1-102-978-00	CERAMIC	220PF	5%	50V
C813	1-123-380-00	ELECT	1MF	20%	50V
C814	1-102-949-00	CERAMIC	12PF	5%	50V
C815	1-101-004-00	CERAMIC	0.01MF		50V
C816	1-123-306-00	ELECT	47MF	20%	10V
C817	1-101-004-00	CERAMIC	0.01MF		50V

FILTER

CF401	1-231-302-00	CERAMIC FILTER (4.27MHZ)
CF402	1-527-823-00	FILTER, CERAMIC
CF501	1-527-823-00	FILTER, CERAMIC

CONNECTOR

CN001	*1-560-891-00	PIN, CONNECTOR 3P
CN002	*1-560-896-00	PIN, CONNECTOR 8P
CN003	*1-560-894-00	PIN, CONNECTOR 6P
CN004	*1-560-900-00	PIN, CONNECTOR 12P
CN005	*1-560-892-00	PIN, CONNECTOR 4P
CN006	*1-560-890-00	PIN, CONNECTOR 2P
CN007	*1-560-894-00	PIN, CONNECTOR 6P

DIODE

D101	8-719-000-04	DIODE MC911
D102	8-719-000-06	DIODE MC921
D201	8-719-911-19	DIODE 1SS119
D202	8-719-911-19	DIODE 1SS119
D203	8-719-000-04	DIODE MC911
D204	8-719-911-19	DIODE 1SS119
D205	8-719-911-19	DIODE 1SS119
D206	8-719-911-19	DIODE 1SS119
D207	8-719-911-19	DIODE 1SS119
D208	8-719-000-04	DIODE MC911
D209	8-719-911-19	DIODE 1SS119
D230	8-719-911-19	DIODE 1SS119
D231	8-719-911-19	DIODE 1SS119
D232	8-719-911-19	DIODE 1SS119
D233	8-719-911-19	DIODE 1SS119
D234	8-719-000-12	DIODE MC931
D235	8-719-000-12	DIODE MC931
D236	8-719-811-48	DIODE 1SS148
D237	8-719-911-19	DIODE 1SS119
D401	8-719-911-19	DIODE 1SS119
D501	8-719-911-19	DIODE 1SS119
D502	8-719-175-07	DIODE RD7.5E-B
D503	8-719-000-12	DIODE MC931
D504	8-719-911-19	DIODE 1SS119
D702	8-719-911-19	DIODE 1SS119
D703	8-719-911-19	DIODE 1SS119
D704	8-719-911-19	DIODE 1SS119
D801	8-719-911-19	DIODE 1SS119
D802	8-719-911-19	DIODE 1SS119

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
		DELAY LINE	
DL101	1-415-065-00	DELAY LINE	
DL301	1-415-360-11	DELAY LINE (1H)	
		FILTER	
FL301	1-235-558-11	FILTER, LOW PASS	
FL401	1-235-550-11	B.P.F (3.58MHZ)	
		IC	
IC101	8-759-101-62	IC CX20043	
IC301	8-758-662-00	IC CX866B	
IC401	8-759-203-99	IC CX10021B-NP	
IC501	8-759-204-43	IC CX7989A	
IC601	8-759-208-94	IC CX894	
		COIL	
L101	1-408-418-00	MICRO INDUCTOR 56UH	
L102	1-408-421-00	MICRO INDUCTOR 100UH	
L103	1-408-419-00	MICRO INDUCTOR 68UH	
L104	1-408-421-00	MICRO INDUCTOR 100UH	
L105	1-408-422-00	MICRO INDUCTOR 120UH	
L106	1-408-421-00	MICRO INDUCTOR 100UH	
L107	1-408-414-00	MICRO INDUCTOR 27UH	
L201	1-408-413-00	MICRO INDUCTOR 22UH	
L230	1-408-416-00	MICRO INDUCTOR 39UH	
L231	1-408-425-00	MICRO INDUCTOR 220UH	
L232	1-408-413-00	MICRO INDUCTOR 22UH	
L233	1-408-419-00	MICRO INDUCTOR 68UH	
L235	1-408-420-00	MICRO INDUCTOR 82UH	
L301	1-408-399-00	MICRO INDUCTOR 1.5UH	
L302	1-408-399-00	MICRO INDUCTOR 1.5UH	
L401	1-408-427-00	MICRO INDUCTOR 330UH	
L402	1-407-498-00	MICRO INDUCTOR 3.3MMH	
L403	1-408-404-00	MICRO INDUCTOR 3.9UH	
L404	1-408-425-00	MICRO INDUCTOR 220UH	
L405	1-408-426-00	MICRO INDUCTOR 270UH	
L406	1-408-426-00	MICRO INDUCTOR 270UH	
L501	1-408-409-00	MICRO INDUCTOR 10UH	
L502	1-408-418-00	MICRO INDUCTOR 56UH	
L503	1-408-421-00	MICRO INDUCTOR 100UH	
L504	1-408-421-00	MICRO INDUCTOR 100UH	
L701	1-408-414-00	MICRO INDUCTOR 27UH	
L702	1-408-408-00	MICRO INDUCTOR 8.2UH	
L703	1-408-429-00	MICRO INDUCTOR 470UH	
L704	1-408-422-00	MICRO INDUCTOR 120UH	
L801	1-408-422-00	MICRO INDUCTOR 120UH	
L802	1-408-425-00	MICRO INDUCTOR 220UH	
L803	1-408-411-00	MICRO INDUCTOR 15UH	
L804	1-408-413-00	MICRO INDUCTOR 22UH	
L805	1-408-422-00	MICRO INDUCTOR 120UH	
L806	1-408-419-00	MICRO INDUCTOR 68UH	

Ref.No	Part No.	Description	Remark
		VARIABLE COIL	
LV101	1-408-512-00	COIL (VARIABLE)	
		TRANSISTOR	
Q101	8-729-900-89	TRANSISTOR DTC144ES	
Q102	8-729-900-89	TRANSISTOR DTC144ES	
Q103	8-729-900-89	TRANSISTOR DTC144ES	
Q104	8-729-245-83	TRANSISTOR 2SC2458	
Q105	8-729-900-89	TRANSISTOR DTC144ES	
Q201	8-729-117-54	TRANSISTOR 2SA1175	
Q202	8-729-117-54	TRANSISTOR 2SA1175	
Q203	8-729-117-54	TRANSISTOR 2SA1175	
Q204	8-729-178-55	TRANSISTOR 2SC2785	
Q205	8-729-117-54	TRANSISTOR 2SA1175	
Q206	8-729-117-54	TRANSISTOR 2SA1175	
Q207	8-729-117-54	TRANSISTOR 2SA1175	
Q230	8-729-178-55	TRANSISTOR 2SC2785	
Q231	8-729-178-55	TRANSISTOR 2SC2785	
Q232	8-729-117-54	TRANSISTOR 2SA1175	
Q233	8-729-900-89	TRANSISTOR DTC144ES	
Q234	8-729-178-55	TRANSISTOR 2SC2785	
Q235	8-729-178-55	TRANSISTOR 2SC2785	
Q236	8-729-245-83	TRANSISTOR 2SC2458	
Q237	8-729-900-89	TRANSISTOR DTC144ES	
Q239	8-729-117-54	TRANSISTOR 2SA1175	
Q240	8-729-117-54	TRANSISTOR 2SA1175	
Q241	8-729-245-83	TRANSISTOR 2SC2458	
Q242	8-729-900-65	TRANSISTOR DTA144ES	
Q243	8-729-900-89	TRANSISTOR DTC144ES	
Q244	8-729-900-89	TRANSISTOR DTC144ES	
Q246	8-729-245-83	TRANSISTOR 2SC2458	
Q301	8-729-900-89	TRANSISTOR DTC144ES	
Q302	8-729-245-83	TRANSISTOR 2SC2458	
Q303	8-729-900-65	TRANSISTOR DTA144ES	
Q304	8-729-900-89	TRANSISTOR DTC144ES	
Q305	8-729-900-89	TRANSISTOR DTC144ES	
Q306	8-729-245-83	TRANSISTOR 2SC2458	
Q307	8-729-900-89	TRANSISTOR DTC144ES	
Q401	8-729-900-89	TRANSISTOR DTC144ES	
Q402	8-729-245-83	TRANSISTOR 2SC2458	
Q404	8-729-245-83	TRANSISTOR 2SC2458	
Q405	8-729-245-83	TRANSISTOR 2SC2458	
Q406	8-729-245-83	TRANSISTOR 2SC2458	
Q407	8-729-204-83	TRANSISTOR 2SA1048	
Q408 ⚠	8-729-245-83	TRANSISTOR 2SC2458	
Q501	8-729-900-89	TRANSISTOR DTC144ES	
Q502	8-729-900-89	TRANSISTOR DTC144ES	
Q503	8-729-245-83	TRANSISTOR 2SC2458	
Q504	8-729-245-83	TRANSISTOR 2SC2458	
Q505	8-729-245-83	TRANSISTOR 2SC2458	
Q506	8-729-245-83	TRANSISTOR 2SC2458	
Q507	8-729-245-83	TRANSISTOR 2SC2458	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

VI-11

Ref.No	Part No.	Description				Remark
Q508	8-729-204-83	TRANSISTOR 2SA1048				
Q509	8-729-245-83	TRANSISTOR 2SC2458				
Q510	8-729-204-83	TRANSISTOR 2SA1048				
Q601	8-729-900-65	TRANSISTOR DTA144ES				
Q602	8-729-900-89	TRANSISTOR DTC144ES				
Q701	8-729-178-55	TRANSISTOR 2SC2785				
Q702	8-729-245-83	TRANSISTOR 2SC2458				
Q703	8-729-245-83	TRANSISTOR 2SC2458				
Q704	8-729-245-83	TRANSISTOR 2SC2458				
Q705	8-729-204-83	TRANSISTOR 2SA1048				
Q706	8-729-204-83	TRANSISTOR 2SA1048				
Q707	8-729-900-89	TRANSISTOR DTC144ES				
Q801	8-729-245-83	TRANSISTOR 2SC2458				
Q802	8-729-245-83	TRANSISTOR 2SC2458				
Q803	8-729-245-83	TRANSISTOR 2SC2458				
Q804	8-729-900-89	TRANSISTOR DTC144ES				
Q805	8-729-178-55	TRANSISTOR 2SC2785				
Q806	8-729-245-83	TRANSISTOR 2SC2458				
Q807	8-729-178-55	TRANSISTOR 2SC2785				
Q808	8-729-900-89	TRANSISTOR DTC144ES				
		RESISTOR				
R101	1-247-891-00	CARBON	330K	5%	1/6W	
R102	1-247-847-00	CARBON	4.7K	5%	1/6W	
R103	1-247-858-00	CARBON	13K	5%	1/6W	
R104	1-247-863-00	CARBON	22K	5%	1/6W	
R105	1-247-857-00	CARBON	12K	5%	1/6W	
R106	1-247-831-00	CARBON	1K	5%	1/6W	
R107	1-247-834-00	CARBON	1.3K	5%	1/6W	
R108	1-247-831-00	CARBON	1K	5%	1/6W	
R109	1-249-421-11	CARBON	2.2K	5%	1/6W	
R110	1-247-861-00	CARBON	18K	5%	1/6W	
R111	1-249-421-11	CARBON	2.2K	5%	1/6W	
R112	1-247-841-00	CARBON	2.7K	5%	1/6W	
R113	1-247-857-00	CARBON	12K	5%	1/6W	
R114	1-247-899-00	CARBON	680K	5%	1/6W	
R115	1-247-836-00	CARBON	1.6K	5%	1/6W	
R116	1-247-847-00	CARBON	4.7K	5%	1/6W	
R117	1-247-883-00	CARBON	150K	5%	1/6W	
R118	1-247-857-00	CARBON	12K	5%	1/6W	
R119	1-247-851-00	CARBON	6.8K	5%	1/6W	
R120	1-247-815-00	CARBON	220	5%	1/6W	
R121	1-247-827-00	CARBON	680	5%	1/6W	
R122	1-247-891-00	CARBON	330K	5%	1/6W	
R123	1-247-827-00	CARBON	680	5%	1/6W	
R124	1-247-843-00	CARBON	3.3K	5%	1/6W	
R125	1-247-855-00	CARBON	10K	5%	1/6W	
R126	1-247-859-00	CARBON	15K	5%	1/6W	
R127	1-247-799-00	CARBON	47	5%	1/6W	
R128	1-247-879-00	CARBON	100K	5%	1/6W	
R129	1-247-831-00	CARBON	1K	5%	1/6W	
R130	1-249-421-11	CARBON	2.2K	5%	1/6W	
R131	1-247-883-00	CARBON	150K	5%	1/6W	

Ref.No	Part No.	Description				Remark
R132	1-247-838-00	CARBON	2K	5%	1/6W	
R133	1-247-835-00	CARBON	1.5K	5%	1/6W	
R134	1-247-852-00	CARBON	7.5K	5%	1/6W	
R135	1-247-883-00	CARBON	150K	5%	1/6W	
R136	1-247-867-00	CARBON	33K	5%	1/6W	
R137	1-247-821-00	CARBON	390	5%	1/6W	
R138	1-247-823-00	CARBON	470	5%	1/6W	
R139	1-247-837-00	CARBON	1.8K	5%	1/6W	
R140	1-249-421-11	CARBON	2.2K	5%	1/6W	
R141	1-247-861-00	CARBON	18K	5%	1/6W	
R142	1-247-861-00	CARBON	18K	5%	1/6W	
R143	1-247-831-00	CARBON	1K	5%	1/6W	
R144	1-247-855-00	CARBON	10K	5%	1/6W	
R145	1-247-855-00	CARBON	10K	5%	1/6W	
R202	1-247-835-00	CARBON	1.5K	5%	1/6W	
R203	1-247-821-00	CARBON	390	5%	1/6W	
R204	1-247-831-00	CARBON	1K	5%	1/6W	
R205	1-247-833-00	CARBON	1.2K	5%	1/6W	
R206	1-247-859-00	CARBON	15K	5%	1/6W	
R207	1-247-835-00	CARBON	1.5K	5%	1/6W	
R208	1-247-869-00	CARBON	39K	5%	1/6W	
R209	1-247-799-00	CARBON	47	5%	1/6W	
R210	1-247-861-00	CARBON	18K	5%	1/6W	
R211	1-247-857-00	CARBON	12K	5%	1/6W	
R212	1-247-851-00	CARBON	6.8K	5%	1/6W	
R213	1-249-421-11	CARBON	2.2K	5%	1/6W	
R214	1-247-838-00	CARBON	2K	5%	1/6W	
R215	1-247-817-00	CARBON	270	5%	1/6W	
R216	1-247-822-00	CARBON	430	5%	1/6W	
R217	1-247-832-00	CARBON	1.1K	5%	1/6W	
R218	1-247-813-00	CARBON	180	5%	1/6W	
R219	1-247-856-00	CARBON	11K	5%	1/6W	
R220	1-247-856-00	CARBON	11K	5%	1/6W	
R221	1-247-813-00	CARBON	180	5%	1/6W	
R222	1-247-865-00	CARBON	27K	5%	1/6W	
R223	1-247-831-00	CARBON	1K	5%	1/6W	
R224	1-247-855-00	CARBON	10K	5%	1/6W	
R225	1-247-867-00	CARBON	33K	5%	1/6W	
R226	1-247-817-00	CARBON	270	5%	1/6W	
R227	1-247-851-00	CARBON	6.8K	5%	1/6W	
R228	1-247-843-00	CARBON	3.3K	5%	1/6W	
R230	1-247-819-00	CARBON	330	5%	1/6W	
R231	1-247-831-00	CARBON	1K	5%	1/6W	
R232	1-247-861-00	CARBON	18K	5%	1/6W	
R233	1-247-861-00	CARBON	18K	5%	1/6W	
R234	1-247-829-00	CARBON	820	5%	1/6W	
R235	1-247-865-00	CARBON	27K	5%	1/6W	
R236	1-247-855-00	CARBON	10K	5%	1/6W	
R237	1-247-797-00	CARBON	39	5%	1/6W	
R238	1-247-831-00	CARBON	1K	5%	1/6W	
R239	1-247-822-00	CARBON	430	5%	1/6W	
R240	1-247-863-00	CARBON	22K	5%	1/6W	
R241	1-247-859-00	CARBON	15K	5%	1/6W	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R242	1-247-834-00	CARBON	1.3K	5%	1/6W	
R243	1-247-822-00	CARBON	430	5%	1/6W	
R244	1-247-823-00	CARBON	470	5%	1/6W	
R245	1-247-823-00	CARBON	470	5%	1/6W	
R246	1-247-819-00	CARBON	330	5%	1/6W	
R247	1-247-819-00	CARBON	330	5%	1/6W	
R248	1-247-856-00	CARBON	11K	5%	1/6W	
R249	1-247-856-00	CARBON	11K	5%	1/6W	
R250	1-247-831-00	CARBON	1K	5%	1/6W	
R251	1-247-815-00	CARBON	220	5%	1/6W	
R252	1-247-885-00	CARBON	180K	5%	1/6W	
R253	1-247-813-00	CARBON	180	5%	1/6W	
R254	1-247-829-00	CARBON	820	5%	1/6W	
R255	1-247-815-00	CARBON	220	5%	1/6W	
R256	1-247-813-00	CARBON	180	5%	1/6W	
R257	1-247-817-00	CARBON	270	5%	1/6W	
R258	1-247-803-00	CARBON	68	5%	1/6W	
R259	1-247-831-00	CARBON	1K	5%	1/6W	
R260	1-247-835-00	CARBON	1.5K	5%	1/6W	
R261	1-249-421-11	CARBON	2.2K	5%	1/6W	
R262	1-247-827-00	CARBON	680	5%	1/6W	
R263	1-249-421-11	CARBON	2.2K	5%	1/6W	
R264	1-247-827-00	CARBON	680	5%	1/6W	
R265	1-247-823-00	CARBON	470	5%	1/6W	
R266	1-249-421-11	CARBON	2.2K	5%	1/6W	
R267	1-247-867-00	CARBON	33K	5%	1/6W	
R268	1-247-831-00	CARBON	1K	5%	1/6W	
R269	1-247-824-00	CARBON	510	5%	1/6W	
R270	1-247-811-00	CARBON	150	5%	1/6W	
R271	1-247-863-00	CARBON	22K	5%	1/6W	
R272	1-247-863-00	CARBON	22K	5%	1/6W	
R273	1-247-813-00	CARBON	180	5%	1/6W	
R274	1-247-817-00	CARBON	270	5%	1/6W	
R277	1-247-783-00	CARBON	10	5%	1/6W	
R278	1-247-861-00	CARBON	18K	5%	1/6W	
R280	1-249-421-11	CARBON	2.2K	5%	1/6W	
R281	1-247-843-00	CARBON	3.3K	5%	1/6W	
R282	1-247-867-00	CARBON	33K	5%	1/6W	
R301	1-247-823-00	CARBON	470	5%	1/6W	
R302	1-247-821-00	CARBON	390	5%	1/6W	
R303	1-247-825-00	CARBON	560	5%	1/6W	
R304	1-247-833-00	CARBON	1.2K	5%	1/6W	
R305	1-247-865-00	CARBON	27K	5%	1/6W	
R306	1-247-871-00	CARBON	47K	5%	1/6W	
R307	1-247-857-00	CARBON	12K	5%	1/6W	
R308	1-247-847-00	CARBON	4.7K	5%	1/6W	
R309	1-247-847-00	CARBON	4.7K	5%	1/6W	
R310	1-247-829-00	CARBON	820	5%	1/6W	
R311	1-247-828-00	CARBON	750	5%	1/6W	
R312	1-247-841-00	CARBON	2.7K	5%	1/6W	
R313	1-247-835-00	CARBON	1.5K	5%	1/6W	
R314	1-247-831-00	CARBON	1K	5%	1/6W	
R315	1-247-831-00	CARBON	1K	5%	1/6W	
R316	1-247-849-00	CARBON	5.6K	5%	1/6W	
R317	1-247-811-00	CARBON	150	5%	1/6W	
R318	1-247-811-00	CARBON	150	5%	1/6W	
R319	1-247-831-00	CARBON	1K	5%	1/6W	
R320	1-247-847-00	CARBON	4.7K	5%	1/6W	
R321	1-247-813-00	CARBON	180	5%	1/6W	
R322	1-247-847-00	CARBON	4.7K	5%	1/6W	
R323	1-247-827-00	CARBON	680	5%	1/6W	
R324	1-247-847-00	CARBON	4.7K	5%	1/6W	
R325	1-247-855-00	CARBON	10K	5%	1/6W	
R326	1-247-847-00	CARBON	4.7K	5%	1/6W	
R401	1-247-855-00	CARBON	10K	5%	1/6W	
R402	1-247-827-00	CARBON	680	5%	1/6W	
R403	1-249-421-11	CARBON	2.2K	5%	1/6W	
R404	1-247-843-00	CARBON	3.3K	5%	1/6W	
R405	1-247-843-00	CARBON	3.3K	5%	1/6W	
R406	1-247-863-00	CARBON	22K	5%	1/6W	
R407	1-247-807-00	CARBON	100	5%	1/6W	
R408	1-247-835-00	CARBON	1.5K	5%	1/6W	
R409	1-249-421-11	CARBON	2.2K	5%	1/6W	
R410	1-247-891-00	CARBON	330K	5%	1/6W	
R411	1-247-831-00	CARBON	1K	5%	1/6W	
R412	1-247-879-00	CARBON	100K	5%	1/6W	
R413	1-247-829-00	CARBON	820	5%	1/6W	
R414	1-247-883-00	CARBON	150K	5%	1/6W	
R415	1-247-891-00	CARBON	330K	5%	1/6W	
R416	1-247-855-00	CARBON	10K	5%	1/6W	
R417	1-247-861-00	CARBON	18K	5%	1/6W	
R418	1-249-421-11	CARBON	2.2K	5%	1/6W	
R419	1-247-843-00	CARBON	3.3K	5%	1/6W	
R420	1-247-881-00	CARBON	120K	5%	1/6W	
R421	1-247-887-00	CARBON	220K	5%	1/6W	
R422	1-247-831-00	CARBON	1K	5%	1/6W	
R423	1-247-849-00	CARBON	5.6K	5%	1/6W	
R424	1-247-831-00	CARBON	1K	5%	1/6W	
R425	1-247-835-00	CARBON	1.5K	5%	1/6W	
R426	1-247-835-00	CARBON	1.5K	5%	1/6W	
R427	1-247-879-00	CARBON	100K	5%	1/6W	
R428	1-247-813-00	CARBON	180	5%	1/6W	
R429	1-247-845-00	CARBON	3.9K	5%	1/6W	
R430	1-247-871-00	CARBON	47K	5%	1/6W	
R431	1-247-845-00	CARBON	3.9K	5%	1/6W	
R432	1-249-421-11	CARBON	2.2K	5%	1/6W	
R433	1-247-871-00	CARBON	47K	5%	1/6W	
R434	1-247-824-00	CARBON	510	5%	1/6W	
R435	1-247-831-00	CARBON	1K	5%	1/6W	
R436	1-247-819-00	CARBON	330	5%	1/6W	
R437	1-247-843-00	CARBON	3.3K	5%	1/6W	
R438	1-247-833-00	CARBON	1.2K	5%	1/6W	
R440	1-247-030-00	CARBON	18	5%	1/8W	F
R441	1-247-843-00	CARBON	3.3K	5%	1/6W	
R442	1-247-855-00	CARBON	10K	5%	1/6W	
R443	1-247-863-00	CARBON	22K	5%	1/6W	

When indicating parts by reference number, please include the board name.

VI-11

Ref.No	Part No.	Description				Remark
R444	1-247-865-00	CARBON	27K	5%	1/6W	
R445	1-247-833-00	CARBON	1.2K	5%	1/6W	
R446	1-247-833-00	CARBON	1.2K	5%	1/6W	
R447	1-247-867-00	CARBON	33K	5%	1/6W	
R448	1-247-867-00	CARBON	33K	5%	1/6W	
R449	1-247-843-00	CARBON	3.3K	5%	1/6W	
R450	1-247-819-00	CARBON	330	5%	1/6W	
R451	1-247-819-00	CARBON	330	5%	1/6W	
R452	1-247-835-00	CARBON	1.5K	5%	1/6W	
R501	1-247-867-00	CARBON	33K	5%	1/6W	
R504	1-247-821-00	CARBON	390	5%	1/6W	
R505	1-247-815-00	CARBON	220	5%	1/6W	
R506	1-247-831-00	CARBON	1K	5%	1/6W	
R507	1-247-821-00	CARBON	390	5%	1/6W	
R508	1-247-871-00	CARBON	47K	5%	1/6W	
R509	1-247-861-00	CARBON	18K	5%	1/6W	
R510	1-247-853-00	CARBON	8.2K	5%	1/6W	
R511	1-247-809-00	CARBON	120	5%	1/6W	
R512	1-247-837-00	CARBON	1.8K	5%	1/6W	
R513	1-249-421-11	CARBON	2.2K	5%	1/6W	
R514	1-247-855-00	CARBON	10K	5%	1/6W	
R515	1-247-855-00	CARBON	10K	5%	1/6W	
R516	1-247-855-00	CARBON	10K	5%	1/6W	
R517	1-247-803-00	CARBON	68	5%	1/6W	
R518	1-247-855-00	CARBON	10K	5%	1/6W	
R519	1-249-421-11	CARBON	2.2K	5%	1/6W	
R520	1-247-881-00	CARBON	120K	5%	1/6W	
R521	1-247-901-00	CARBON	820K	5%	1/6W	
R522	1-247-857-00	CARBON	12K	5%	1/6W	
R523	1-247-869-00	CARBON	39K	5%	1/6W	
R524	1-247-847-00	CARBON	4.7K	5%	1/6W	
R525	1-247-841-00	CARBON	2.7K	5%	1/6W	
R526	1-247-823-00	CARBON	470	5%	1/6W	
R527	1-247-843-00	CARBON	3.3K	5%	1/6W	
R528	1-247-871-00	CARBON	47K	5%	1/6W	
R529	1-247-831-00	CARBON	1K	5%	1/6W	
R530	1-247-831-00	CARBON	1K	5%	1/6W	
R531	1-247-807-00	CARBON	100	5%	1/6W	
R532	1-247-823-00	CARBON	470	5%	1/6W	
R533	1-247-803-00	CARBON	68	5%	1/6W	
R534	1-247-823-00	CARBON	470	5%	1/6W	
R535	1-247-807-00	CARBON	100	5%	1/6W	
R536	1-247-817-00	CARBON	270	5%	1/6W	
R601	1-247-823-00	CARBON	470	5%	1/6W	
R602	1-247-855-00	CARBON	10K	5%	1/6W	
R603	1-247-823-00	CARBON	470	5%	1/6W	
R701	1-247-865-00	CARBON	27K	5%	1/6W	
R702	1-247-823-00	CARBON	470	5%	1/6W	
R703	1-247-859-00	CARBON	15K	5%	1/6W	
R704	1-247-835-00	CARBON	1.5K	5%	1/6W	
R705	1-247-823-00	CARBON	470	5%	1/6W	
R706	1-247-823-00	CARBON	470	5%	1/6W	
R707	1-247-807-00	CARBON	100	5%	1/6W	
R708	1-247-823-00	CARBON	470	5%	1/6W	
R709	1-247-863-00	CARBON	22K	5%	1/6W	
R710	1-247-863-00	CARBON	22K	5%	1/6W	
R711	1-247-853-00	CARBON	8.2K	5%	1/6W	
R712	1-247-825-00	CARBON	560	5%	1/6W	
R713	1-247-871-00	CARBON	47K	5%	1/6W	
R714	1-247-855-00	CARBON	10K	5%	1/6W	
R715	1-247-833-00	CARBON	1.2K	5%	1/6W	
R716	1-247-819-00	CARBON	330	5%	1/6W	
R717	1-247-871-00	CARBON	47K	5%	1/6W	
R718	1-247-855-00	CARBON	10K	5%	1/6W	
R719	1-247-821-00	CARBON	390	5%	1/6W	
R720	1-247-813-00	CARBON	180	5%	1/6W	
R721	1-247-855-00	CARBON	10K	5%	1/6W	
R722	1-247-863-00	CARBON	22K	5%	1/6W	
R723	1-247-853-00	CARBON	8.2K	5%	1/6W	
R724	1-247-841-00	CARBON	2.7K	5%	1/6W	
R725	1-247-823-00	CARBON	470	5%	1/6W	
R726	1-247-855-00	CARBON	10K	5%	1/6W	
R801	1-247-865-00	CARBON	27K	5%	1/6W	
R802	1-247-807-00	CARBON	100	5%	1/6W	
R803	1-247-861-00	CARBON	18K	5%	1/6W	
R804	1-247-843-00	CARBON	3.3K	5%	1/6W	
R805	1-247-829-00	CARBON	820	5%	1/6W	
R806	1-247-809-00	CARBON	120	5%	1/6W	
R807	1-247-855-00	CARBON	10K	5%	1/6W	
R809	1-247-831-00	CARBON	1K	5%	1/6W	
R810	1-247-861-00	CARBON	18K	5%	1/6W	
R811	1-247-863-00	CARBON	22K	5%	1/6W	
R812	1-247-865-00	CARBON	27K	5%	1/6W	
R813	1-247-825-00	CARBON	560	5%	1/6W	
R814	1-247-867-00	CARBON	33K	5%	1/6W	
R815	1-247-867-00	CARBON	33K	5%	1/6W	
R816	1-247-812-00	CARBON	160	5%	1/6W	
R817	1-249-421-11	CARBON	2.2K	5%	1/6W	
R818	1-247-827-00	CARBON	680	5%	1/6W	
R819	1-247-821-00	CARBON	390	5%	1/6W	
R820	1-247-815-00	CARBON	220	5%	1/6W	
R821	1-247-797-00	CARBON	39	5%	1/6W	
R822	1-247-815-00	CARBON	220	5%	1/6W	
R823	1-247-843-00	CARBON	3.3K	5%	1/6W	
R824	1-247-847-00	CARBON	4.7K	5%	1/6W	
R825	1-247-845-00	CARBON	3.9K	5%	1/6W	
R826	1-247-823-00	CARBON	470	5%	1/6W	
R827	1-247-823-00	CARBON	470	5%	1/6W	
R828	1-247-821-00	CARBON	390	5%	1/6W	

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV101	1-228-989-00	RES, ADJ, CARBON 470	
RV102	1-228-996-00	RES, ADJ, CARBON 47K	
RV201	1-228-993-00	RES, ADJ, CARBON 4.7K	
RV202	1-228-989-00	RES, ADJ, CARBON 470	
RV203	1-228-994-00	RES, ADJ, CARBON 10K	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
RV230	1-228-991-00	RES, ADJ, CARBON 2.2K	
RV231	1-228-989-00	RES, ADJ, CARBON 470	
RV301	1-228-994-00	RES, ADJ, CARBON 10K	
RV401	1-228-991-00	RES, ADJ, CARBON 2.2K	
RV402	1-228-996-00	RES, ADJ, CARBON 47K	
RV403	1-228-994-00	RES, ADJ, CARBON 10K	
RV404	1-228-990-00	RES, ADJ, CARBON 1K	
RV501	1-228-995-00	RES, ADJ, CARBON 22K	
RV502	1-228-995-00	RES, ADJ, CARBON 22K	
RV503	1-228-995-00	RES, ADJ, CARBON 22K	
RV504	1-228-995-00	RES, ADJ, CARBON 22K	
RV701	1-228-990-00	RES, ADJ, CARBON 1K	

TRANSFORMER

Ref.No	Part No.	Description
T101	1-426-141-00	COIL (EQT)

CRYSTAL

Ref.No	Part No.	Description
X401	1-527-396-00	CRYSTAL, OSC

****

*A-6713-225-A AU-8 BOARD, COMPLETE
****

Part No.	Description
X-3684-321-1	CASE (2) ASSY, SHIELD, AU
3-684-387-01	CASE (2) (MAIN), SHIELD, AU
3-684-389-02	LID, AU SHIELD CASE (2)

CAPACITOR

Ref.No	Part No.	Description			Remark
C001	1-102-973-00	CERAMIC	100PF	5%	50V
C002	1-101-003-00	CERAMIC	0.0047MF		50V
C003	1-101-003-00	CERAMIC	0.0047MF		50V
C004	1-123-330-00	ELECT	22MF	20%	16V
C005	1-130-504-51	MYLAR	0.001MF	10%	50V
C006	1-130-029-00	MYLAR	0.0082MF	10%	50V
C007	1-136-147-00	MYLAR	0.0033MF	10%	50V
C008	1-102-824-00	CERAMIC	470PF	5%	50V
C009	1-123-329-51	ELECT	10MF	20%	25V
C010	1-123-329-51	ELECT	10MF	20%	25V
C011	1-101-003-00	CERAMIC	0.0047MF		50V
C012	1-101-003-00	CERAMIC	0.0047MF		50V
C013	1-123-318-00	ELECT	33MF	20%	16V
C014	1-101-003-00	CERAMIC	0.0047MF		50V
C015	1-101-003-00	CERAMIC	0.0047MF		50V
C016	1-101-003-00	CERAMIC	0.0047MF		50V
C017	1-101-003-00	CERAMIC	0.0047MF		50V
C018	1-102-973-00	CERAMIC	100PF	5%	50V
C019	1-123-330-00	ELECT	22MF	20%	16V
C024	1-123-307-00	ELECT	100MF	20%	10V
C026	1-123-329-51	ELECT	10MF	20%	25V
C027	1-101-003-00	CERAMIC	0.0047MF		50V
C028	1-123-307-00	ELECT	100MF	20%	10V
C029	1-123-318-00	ELECT	33MF	20%	16V
C030	1-123-318-00	ELECT	33MF	20%	16V
C031	1-102-958-00	CERAMIC	20PF	5%	50V
C032	1-130-485-00	MYLAR	0.015MF	5%	50V
C033	1-102-936-00	CERAMIC	3PF	0.25PF	50V
C034	1-130-485-00	MYLAR	0.015MF	5%	50V
C035	1-130-498-00	MYLAR	0.18MF	5%	50V
C036	1-130-491-00	MYLAR	0.047MF	5%	50V
C037	1-130-469-00	MYLAR	680PF	5%	50V
C038	1-102-936-00	CERAMIC	3PF	0.25PF	50V
C039	1-130-475-00	MYLAR	0.0022MF	5%	50V
C040	1-130-493-00	MYLAR	0.068MF	5%	50V
C041	1-130-485-00	MYLAR	0.015MF	5%	50V
C042	1-123-380-00	ELECT	1MF	20%	50V
C043	1-123-329-51	ELECT	10MF	20%	25V
C046	1-123-329-51	ELECT	10MF	20%	25V
C047	1-123-329-51	ELECT	10MF	20%	25V
C050	1-101-003-00	CERAMIC	0.0047MF		50V
C051	1-101-003-00	CERAMIC	0.0047MF		50V
C053	1-123-330-00	ELECT	22MF	20%	16V
C054	1-101-003-00	CERAMIC	0.0047MF		50V
C056	1-123-382-00	ELECT	3.3MF	20%	50V
C057	1-123-382-00	ELECT	3.3MF	20%	50V
C058	1-101-003-00	CERAMIC	0.0047MF		50V
C059	1-101-003-00	CERAMIC	0.0047MF		50V
C060	1-101-003-00	CERAMIC	0.0047MF		50V
C061	1-101-003-00	CERAMIC	0.0047MF		50V
C063	1-123-329-51	ELECT	10MF	20%	25V
C064	1-101-003-00	CERAMIC	0.0047MF		50V
C065	1-123-333-00	ELECT	100MF	20%	25V
C066	1-101-001-00	CERAMIC	0.001MF		50V
C067	1-123-309-00	ELECT	330MF	20%	6.3V
C099	1-123-306-00	ELECT	47MF	20%	10V
C103	1-123-330-00	ELECT	22MF	20%	16V
C104	1-130-497-00	MYLAR	0.15MF	10%	50V
C105	1-130-497-00	MYLAR	0.15MF	10%	50V
C106	1-123-330-00	ELECT	22MF	20%	16V
C107	1-123-330-00	ELECT	22MF	20%	16V
C108	1-123-330-00	ELECT	22MF	20%	16V
C110	1-101-003-00	CERAMIC	0.0047MF		50V
C111	1-101-003-00	CERAMIC	0.0047MF		50V
C112	1-101-003-00	CERAMIC	0.0047MF		50V
C113	1-123-330-00	ELECT	22MF	20%	16V
C114	1-101-003-00	CERAMIC	0.0047MF		50V
C115	1-123-330-00	ELECT	22MF	20%	16V
C116	1-123-330-00	ELECT	22MF	20%	16V
C201	1-102-973-00	CERAMIC	100PF	5%	50V
C202	1-101-003-00	CERAMIC	0.0047MF		50V
C203	1-101-003-00	CERAMIC	0.0047MF		50V
C204	1-123-330-00	ELECT	22MF	20%	16V
C205	1-130-504-51	MYLAR	0.001MF	10%	50V
C206	1-130-029-00	MYLAR	0.0082MF	10%	50V
C207	1-136-147-00	MYLAR	0.0033MF	10%	50V
C208	1-102-824-00	CERAMIC	470PF	5%	50V
C209	1-123-329-51	ELECT	10MF	20%	25V

When indicating parts by reference number, please include the board name.

AU-8

Ref.No	Part No.	Description			Remark
C210	1-123-329-51	ELECT	10MF	20%	25V
C211	1-101-003-00	CERAMIC	0.0047MF		50V
C212	1-101-003-00	CERAMIC	0.0047MF		50V
C213	1-123-318-00	ELECT	33MF	20%	16V
C214	1-101-003-00	CERAMIC	0.0047MF		50V
C215	1-101-003-00	CERAMIC	0.0047MF		50V
C216	1-101-003-00	CERAMIC	0.0047MF		50V
C217	1-101-003-00	CERAMIC	0.0047MF		50V
C218	1-102-973-00	CERAMIC	100PF	5%	50V
C219	1-123-330-00	ELECT	22MF	20%	16V
C220	1-136-165-00	MYLAR	0.1MF	10%	50V
C221	1-123-381-00	ELECT	2.2MF	20%	50V
C222	1-130-483-00	MYLAR	0.01MF	5%	50V
C223	1-130-504-51	MYLAR	0.001MF	10%	50V
C226	1-123-329-51	ELECT	10MF	20%	25V
C227	1-101-003-00	CERAMIC	0.0047MF		50V
C228	1-123-307-00	ELECT	100MF	20%	10V
C229	1-123-318-00	ELECT	33MF	20%	16V
C230	1-123-318-00	ELECT	33MF	20%	16V
C231	1-102-958-00	CERAMIC	20PF	5%	50V
C232	1-130-485-00	MYLAR	0.015MF	5%	50V
C233	1-102-936-00	CERAMIC	3PF	0.25PF	50V
C234	1-130-485-00	MYLAR	0.015MF	5%	50V
C235	1-130-498-00	MYLAR	0.18MF	5%	50V
C236	1-130-491-00	MYLAR	0.047MF	5%	50V
C237	1-130-469-00	MYLAR	680PF	5%	50V
C238	1-102-936-00	CERAMIC	3PF	0.25PF	50V
C239	1-130-475-00	MYLAR	0.0022MF	5%	50V
C240	1-130-493-00	MYLAR	0.068MF	5%	50V
C241	1-130-485-00	MYLAR	0.015MF	5%	50V
C242	1-123-380-00	ELECT	1MF	20%	50V
C243	1-123-329-51	ELECT	10MF	20%	25V
C244	1-101-003-00	CERAMIC	0.0047MF		50V
C245	1-123-330-00	ELECT	22MF	20%	16V
C246	1-123-329-51	ELECT	10MF	20%	25V
C247	1-123-329-51	ELECT	10MF	20%	25V
C250	1-101-003-00	CERAMIC	0.0047MF		50V
C251	1-101-003-00	CERAMIC	0.0047MF		50V
C253	1-123-330-00	ELECT	22MF	20%	16V
C254	1-101-003-00	CERAMIC	0.0047MF		50V
C256	1-123-382-00	ELECT	3.3MF	20%	50V
C257	1-123-382-00	ELECT	3.3MF	20%	50V
C258	1-101-003-00	CERAMIC	0.0047MF		50V
C259	1-101-003-00	CERAMIC	0.0047MF		50V
C260	1-101-003-00	CERAMIC	0.0047MF		50V
C261	1-101-003-00	CERAMIC	0.0047MF		50V
C263	1-123-329-51	ELECT	10MF	20%	25V
C299	1-123-306-00	ELECT	47MF	20%	10V
C401	1-130-512-00	MYLAR	0.0047MF	10%	50V
C402	1-130-476-00	MYLAR	0.0027MF	5%	50V
C403	1-123-356-00	ELECT	10MF	20%	16V
C404	1-130-476-00	MYLAR	0.0027MF	5%	50V
C405	1-130-471-00	MYLAR	0.001MF	5%	50V
C406	1-130-471-00	MYLAR	0.001MF	5%	50V
C410	1-123-308-00	ELECT	220MF	20%	6.3V
C421	1-123-329-51	ELECT	10MF	20%	25V
C422	1-123-329-51	ELECT	10MF	20%	25V
C423	1-161-059-00	CERAMIC	0.047MF	10%	25V
C501	1-123-330-00	ELECT	22MF	20%	16V
C502	1-123-332-00	ELECT	47MF	20%	16V
C600	1-161-059-00	CERAMIC	0.047MF	10%	25V
C601	1-123-318-00	ELECT	33MF	20%	16V
C602	1-123-329-51	ELECT	10MF	20%	25V
C603	1-123-332-00	ELECT	47MF	20%	25V
C605	1-123-330-00	ELECT	22MF	20%	16V
C608	1-123-306-00	ELECT	47MF	20%	10V
C609	1-123-329-51	ELECT	10MF	20%	25V
C610	1-123-330-00	ELECT	22MF	20%	16V
C611	1-161-059-00	CERAMIC	0.047MF	10%	25V
C614	1-161-059-00	CERAMIC	0.047MF	10%	25V
C615	1-123-307-00	ELECT	100MF	20%	10V
C616	1-123-329-51	ELECT	10MF	20%	25V
C617	1-123-329-51	ELECT	10MF	20%	25V
C618	1-161-013-00	CERAMIC	0.01MF	10%	25V
C619	1-161-013-00	CERAMIC	0.01MF	10%	25V
C621	1-162-306-31	CERAMIC	0.01MF	30%	16V
C700	1-102-824-00	CERAMIC	470PF	5%	50V
C701	1-123-329-51	ELECT	10MF	20%	25V
C702	1-101-880-00	CERAMIC	47PF	5%	50V
C704	1-123-329-51	ELECT	10MF	20%	25V
C708	1-123-318-00	ELECT	33MF	20%	16V
C710	1-123-332-00	ELECT	47MF	20%	25V
C711	1-102-976-00	CERAMIC	180PF	5%	50V
C800	1-102-824-00	CERAMIC	470PF	5%	50V
C801	1-123-329-51	ELECT	10MF	20%	25V
C802	1-101-880-00	CERAMIC	47PF	5%	50V
C803	1-123-329-51	ELECT	10MF	20%	25V
C804	1-123-329-51	ELECT	10MF	20%	25V
C808	1-123-318-00	ELECT	33MF	20%	16V
C810	1-123-332-00	ELECT	47MF	20%	25V
C811	1-102-976-00	CERAMIC	180PF	5%	50V
C900	1-161-059-00	CERAMIC	0.047MF	10%	25V
C902	1-123-380-00	ELECT	1MF	20%	50V
C903	1-123-329-51	ELECT	10MF	20%	25V
C904	1-123-306-00	ELECT	47MF	20%	10V
C905	1-130-481-00	MYLAR	0.0068MF	5%	50V
C906	1-130-482-00	MYLAR	0.0082MF	5%	50V
C907	1-136-165-00	MYLAR	0.1MF	10%	50V
C908	1-123-329-51	ELECT	10MF	20%	25V
C909	1-123-380-00	ELECT	1MF	20%	50V
C910	1-123-330-00	ELECT	22MF	20%	16V
C912	1-123-306-00	ELECT	47MF	20%	10V
C913	1-130-472-00	MYLAR	0.0012MF	5%	50V
C914	1-102-980-00	CERAMIC	270PF	5%	50V
C915	1-102-816-00	CERAMIC	120PF	5%	50V
C916	1-123-380-00	ELECT	1MF	20%	50V

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
C917	1-130-474-00	MYLAR	0.0018MF	5%	50V
C918	1-123-306-00	ELECT	47MF	20%	10V
C919	1-130-486-51	MYLAR	0.018MF	5%	50V
C920	1-130-474-00	MYLAR	0.0018MF	5%	50V
C921	1-123-379-00	ELECT	0.47MF	20%	50V
C922	1-161-013-00	CERAMIC	0.01MF	10%	25V
C923	1-123-382-00	ELECT	3.3MF	20%	50V
C924	1-123-380-00	ELECT	1MF	20%	50V
C925	1-130-482-00	MYLAR	0.0082MF	5%	50V
C926	1-123-318-00	ELECT	33MF	20%	16V
C927	1-123-306-00	ELECT	47MF	20%	10V
C928	1-130-479-00	MYLAR	0.0047MF	5%	50V
C929	1-130-477-00	MYLAR	0.0033MF	5%	50V
C930	1-130-923-00	FILM	0.0047MF	10%	400V
C931	1-123-318-00	ELECT	33MF	20%	16V
C932	1-123-330-00	ELECT	22MF	20%	16V
		CONNECTOR			
CN001	*1-560-894-00	PIN, CONNECTOR 6P			
CN002	*1-560-899-00	PIN, CONNECTOR 11P			
CN003	*1-560-897-00	PIN, CONNECTOR 9P			
CN004	*1-560-894-00	PIN, CONNECTOR 6P			
CN005	*1-560-890-00	PIN, CONNECTOR 2P			
CN006	*1-560-893-00	PIN, CONNECTOR 5P			
CN007	*1-560-891-00	PIN, CONNECTOR 3P			
CN008	*1-560-894-00	PIN, CONNECTOR 6P			
CN009	*1-560-891-00	PIN, CONNECTOR 3P			
CN011	*1-560-891-00	PIN, CONNECTOR 3P			
		JACK			
CNJ001	1-507-742-00	JACK, PIN 2P			
CNJ002	1-507-744-00	JACK, PIN 4P			
CNJ013	1-507-678-21	JACK			
		DIODE			
D001	8-719-000-12	DIODE MC931			
D201	8-719-000-12	DIODE MC931			
D210	8-719-911-19	DIODE 1SS119			
D401	8-719-911-19	DIODE 1SS119			
D408	8-719-100-47	DIODE RD8.2EB1			
D502	8-719-100-35	DIODE RD5.6EB2			
D503	8-719-100-58	DIODE RD10EB3			
D600	8-719-911-19	DIODE 1SS119			
D601	8-719-911-19	DIODE 1SS119			
D604	8-719-108-12	DIODE RD9.1EW			
D700	8-719-151-07	DIODE RD5.1E-B			
D800	8-719-151-07	DIODE RD5.1E-B			
D901	8-719-000-06	DIODE MC921			
		FILTER			
FL001	1-235-372-11	FILTER, BAND PASS			
FL002	1-235-373-11	FILTER, BAND PASS			
FL003	1-235-374-11	FILTER, BAND PASS			

Ref.No	Part No.	Description			Remark
FL004	1-235-375-11	FILTER, BAND PASS			
FL101	1-464-400-11	L.P.F UNIT			
FL102	1-235-370-11	FILTER (LPF)			
FL202	1-235-369-11	FILTER (LPF)			
		IC			
IC001	8-752-009-70	IC CX20097			
IC002	8-752-010-50	IC CX20105			
IC003	8-752-010-40	IC CX20104			
IC004	8-757-982-00	IC CX7982			
IC007	8-752-006-10	IC CX20061			
IC202	8-752-010-50	IC CX20105			
IC207	8-752-006-10	IC CX20061			
IC600	8-759-910-45	IC TK15010			
IC601	8-752-006-10	IC CX20061			
IC602	8-759-145-58	IC UPC4558C			
IC603	8-759-240-52	IC TC4052BP			
IC604	8-759-745-60	IC NJM4560D			
IC900	8-759-102-68	IC UPC1520CA			
IC901	8-759-101-73	IC UPC1513HA			
		COIL			
L201	1-410-120-11	MICRO INDUCTOR 1.2MMH			
L501	1-407-510-00	MICRO INDUCTOR 33MMH			
L503	⚠.1-410-120-11	MICRO INDUCTOR 1.2MMH			
L900	1-407-508-00	MICRO INDUCTOR 22MMH			
		TRANSISTOR			
Q002	8-729-900-36	TRANSISTOR DTC124ES			
Q003	8-729-900-36	TRANSISTOR DTC124ES			
Q104	8-729-900-36	TRANSISTOR DTC124ES			
Q202	8-729-900-36	TRANSISTOR DTC124ES			
Q203	8-729-900-36	TRANSISTOR DTC124ES			
Q204	⚠.8-729-245-82	TRANSISTOR 2SC2458			
Q401	8-729-204-83	TRANSISTOR 2SA1048			
Q402	8-729-245-83	TRANSISTOR 2SC2458			
Q403	8-729-204-83	TRANSISTOR 2SA1048			
Q404	8-729-245-83	TRANSISTOR 2SC2458			
Q501	8-729-965-22	TRANSISTOR 2SC1652			
Q502	⚠.8-729-965-22	TRANSISTOR 2SC1652			
Q503	8-729-900-89	TRANSISTOR DTC144ES			
Q600	8-729-245-83	TRANSISTOR 2SC2458			
Q601	8-729-245-83	TRANSISTOR 2SC2458			
Q700	8-729-967-32	TRANSISTOR 2SC2673			
Q800	8-729-967-32	TRANSISTOR 2SC2673			
Q902	8-729-245-83	TRANSISTOR 2SC2458			
Q904	8-729-177-43	TRANSISTOR 2SD774			
Q906	⚠.8-729-965-22	TRANSISTOR 2SC1652			
Q907	8-729-900-89	TRANSISTOR DTC144ES			
Q908	8-729-900-89	TRANSISTOR DTC144ES			
		RESISTOR			
R001	1-247-898-00	CARBON	620K	5%	1/6W

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

AU-8

Ref.No	Part No.	Description				Remark
R002	1-247-843-00	CARBON	3.3K	5%	1/6W	
R003	1-247-843-00	CARBON	3.3K	5%	1/6W	
R004	1-247-843-00	CARBON	3.3K	5%	1/6W	
R005	1-247-845-00	CARBON	3.9K	5%	1/6W	
R006	1-215-429-00	METAL	2.2K	1%	1/6W	
R007	1-247-877-00	CARBON	82K	5%	1/6W	
R008	1-215-458-00	METAL	36K	1%	1/6W	
R010	1-247-857-00	CARBON	12K	5%	1/6W	
R011	1-215-441-00	METAL	6.8K	1%	1/6W	
R012	1-249-421-11	CARBON	2.2K	5%	1/6W	
R016 ⚠	1-247-803-00	CARBON	68	5%	1/6W	
R017	1-247-863-00	CARBON	22K	5%	1/6W	
R020	1-215-439-00	METAL	5.6K	1%	1/6W	
R021	1-247-849-00	CARBON	5.6K	5%	1/6W	
R022	1-247-859-00	CARBON	15K	5%	1/6W	
R023	1-247-852-00	CARBON	7.5K	5%	1/6W	
R024	1-247-824-00	CARBON	510	5%	1/6W	
R025	1-247-857-00	CARBON	12K	5%	1/6W	
R026	1-247-855-00	CARBON	10K	5%	1/6W	
R027	1-247-852-00	CARBON	7.5K	5%	1/6W	
R028	1-247-843-00	CARBON	3.3K	5%	1/6W	
R029	1-247-834-00	CARBON	1.3K	5%	1/6W	
R030	1-247-804-00	CARBON	75	5%	1/6W	
R031	1-247-858-00	CARBON	13K	5%	1/6W	
R032	1-247-858-00	CARBON	13K	5%	1/6W	
R033	1-247-833-00	CARBON	1.2K	5%	1/6W	
R034	1-247-838-00	CARBON	2K	5%	1/6W	
R035	1-247-834-00	CARBON	1.3K	5%	1/6W	
R036	1-247-885-00	CARBON	180K	5%	1/6W	
R037	1-247-849-00	CARBON	5.6K	5%	1/6W	
R038	1-247-865-00	CARBON	27K	5%	1/6W	
R040	1-215-437-00	METAL	4.7K	1%	1/6W	
R041	1-247-824-00	CARBON	510	5%	1/6W	
R042	1-247-825-00	CARBON	560	5%	1/6W	
R043	1-247-855-00	CARBON	10K	5%	1/6W	
R044	1-247-895-00	CARBON	470K	5%	1/6W	
R045	1-247-807-00	CARBON	100	5%	1/6W	
R046	1-247-817-00	CARBON	270	5%	1/6W	
R047	1-247-867-00	CARBON	33K	5%	1/6W	
R050	1-247-868-00	CARBON	36K	5%	1/6W	
R051	1-247-831-00	CARBON	1K	5%	1/6W	
R052	1-215-453-00	METAL	22K	1%	1/6W	
R053	1-247-864-00	CARBON	24K	5%	1/6W	
R054	1-247-855-00	CARBON	10K	5%	1/6W	
R055	1-247-867-00	CARBON	33K	5%	1/6W	
R056	1-249-421-11	CARBON	2.2K	5%	1/6W	
R057	1-247-861-00	CARBON	18K	5%	1/6W	
R059	1-215-451-00	METAL	18K	1%	1/6W	
R060	1-247-835-00	CARBON	1.5K	5%	1/6W	
R064	1-247-817-00	CARBON	270	5%	1/6W	
R065	1-247-885-00	CARBON	180K	5%	1/6W	
R066	1-247-823-00	CARBON	470	5%	1/6W	
R069	1-215-442-00	METAL	7.5K	1%	1/6W	
R071	1-247-895-00	CARBON	470K	5%	1/6W	
R072	1-247-895-00	CARBON	470K	5%	1/6W	
R083	1-215-439-00	METAL	5.6K	1%	1/6W	
R085	1-247-849-00	CARBON	5.6K	5%	1/6W	
R088	1-247-818-00	CARBON	300	5%	1/6W	
R089	1-247-859-00	CARBON	15K	5%	1/6W	
R093	1-247-831-00	CARBON	1K	5%	1/6W	
R094	1-247-825-00	CARBON	560	5%	1/6W	
R097	1-247-817-00	CARBON	270	5%	1/6W	
R098	1-247-813-00	CARBON	180	5%	1/6W	
R099	1-247-852-00	CARBON	7.5K	5%	1/6W	
R101	1-247-859-00	CARBON	15K	5%	1/6W	
R104	1-247-857-00	CARBON	12K	5%	1/6W	
R105	1-247-891-00	CARBON	330K	5%	1/6W	
R106	1-247-891-00	CARBON	330K	5%	1/6W	
R107	1-247-891-00	CARBON	330K	5%	1/6W	
R108	1-247-891-00	CARBON	330K	5%	1/6W	
R109	1-247-857-00	CARBON	12K	5%	1/6W	
R111	1-247-859-00	CARBON	15K	5%	1/6W	
R112	1-247-809-00	CARBON	120	5%	1/6W	
R113	1-247-879-00	CARBON	100K	5%	1/6W	
R114	1-247-860-00	CARBON	16K	5%	1/6W	
R115	1-247-860-00	CARBON	16K	5%	1/6W	
R116	1-247-829-00	CARBON	820	5%	1/6W	
R117	1-247-831-00	CARBON	1K	5%	1/6W	
R118	1-247-831-00	CARBON	1K	5%	1/6W	
R119	1-247-829-00	CARBON	820	5%	1/6W	
R120	1-247-831-00	CARBON	1K	5%	1/6W	
R121	1-247-829-00	CARBON	820	5%	1/6W	
R122	1-247-831-00	CARBON	1K	5%	1/6W	
R123	1-247-829-00	CARBON	820	5%	1/6W	
R124	1-247-855-00	CARBON	10K	5%	1/6W	
R125	1-247-849-00	CARBON	5.6K	5%	1/6W	
R201	1-247-898-00	CARBON	620K	5%	1/6W	
R202	1-247-843-00	CARBON	3.3K	5%	1/6W	
R203	1-247-843-00	CARBON	3.3K	5%	1/6W	
R204	1-247-843-00	CARBON	3.3K	5%	1/6W	
R205	1-215-437-00	METAL	4.7K	1%	1/6W	
R206	1-215-433-00	METAL	3.3K	1%	1/6W	
R207	1-247-873-00	CARBON	56K	5%	1/6W	
R208	1-215-457-00	METAL	33K	1%	1/6W	
R210	1-247-851-00	CARBON	6.8K	5%	1/6W	
R211	1-215-439-00	METAL	5.6K	1%	1/6W	
R212	1-249-421-11	CARBON	2.2K	5%	1/6W	
R214	1-247-869-00	CARBON	39K	5%	1/6W	
R215	1-247-883-00	CARBON	150K	5%	1/6W	
R217	1-247-863-00	CARBON	22K	5%	1/6W	
R219	1-249-421-11	CARBON	2.2K	5%	1/6W	
R220	1-247-855-00	CARBON	10K	5%	1/6W	
R221	1-247-849-00	CARBON	5.6K	5%	1/6W	
R222	1-247-859-00	CARBON	15K	5%	1/6W	
R223	1-247-852-00	CARBON	7.5K	5%	1/6W	
R224	1-247-824-00	CARBON	510	5%	1/6W	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R225	1-247-857-00	CARBON	12K	5%	1/6W	
R226	1-247-855-00	CARBON	10K	5%	1/6W	
R227	1-247-852-00	CARBON	7.5K	5%	1/6W	
R228	1-247-843-00	CARBON	3.3K	5%	1/6W	
R229	1-247-834-00	CARBON	1.3K	5%	1/6W	
R230	1-247-804-00	CARBON	75	5%	1/6W	
R231	1-247-858-00	CARBON	13K	5%	1/6W	
R232	1-247-858-00	CARBON	13K	5%	1/6W	
R233	1-247-833-00	CARBON	1.2K	5%	1/6W	
R234	1-247-838-00	CARBON	2K	5%	1/6W	
R235	1-247-834-00	CARBON	1.3K	5%	1/6W	
R236	1-247-885-00	CARBON	180K	5%	1/6W	
R237	1-247-849-00	CARBON	5.6K	5%	1/6W	
R238	1-247-865-00	CARBON	27K	5%	1/6W	
R239	1-247-855-00	CARBON	10K	5%	1/6W	
R241	1-247-824-00	CARBON	510	5%	1/6W	
R242	1-247-825-00	CARBON	560	5%	1/6W	
R243	1-247-855-00	CARBON	10K	5%	1/6W	
R244	1-247-895-00	CARBON	470K	5%	1/6W	
R245	1-247-807-00	CARBON	100	5%	1/6W	
R250	1-247-865-00	CARBON	27K	5%	1/6W	
R251	1-247-831-00	CARBON	1K	5%	1/6W	
R252	1-215-453-00	METAL	22K	1%	1/6W	
R254	1-247-855-00	CARBON	10K	5%	1/6W	
R255	1-247-866-00	CARBON	30K	5%	1/6W	
R260	1-247-835-00	CARBON	1.5K	5%	1/6W	
R264	1-247-817-00	CARBON	270	5%	1/6W	
R265	1-247-885-00	CARBON	180K	5%	1/6W	
R266	1-247-823-00	CARBON	470	5%	1/6W	
R269	1-215-438-00	METAL	5.1K	1%	1/6W	
R271	1-247-895-00	CARBON	470K	5%	1/6W	
R272	1-247-895-00	CARBON	470K	5%	1/6W	
R283	1-215-441-00	METAL	6.8K	1%	1/6W	
R288	1-247-815-00	CARBON	220	5%	1/6W	
R289	1-247-850-00	CARBON	6.2K	5%	1/6W	
R293	1-247-824-00	CARBON	510	5%	1/6W	
R294	1-247-825-00	CARBON	560	5%	1/6W	
R297	1-247-819-00	CARBON	330	5%	1/6W	
R298	1-247-811-00	CARBON	150	5%	1/6W	
R299	1-247-843-00	CARBON	3.3K	5%	1/6W	
R401	1-247-855-00	CARBON	10K	5%	1/6W	
R402	1-247-879-00	CARBON	100K	5%	1/6W	
R403	1-249-421-11	CARBON	2.2K	5%	1/6W	
R404	1-247-864-00	CARBON	24K	5%	1/6W	
R405	1-247-875-00	CARBON	68K	5%	1/6W	
R406	1-247-855-00	CARBON	10K	5%	1/6W	
R408	1-247-863-00	CARBON	22K	5%	1/6W	
R409	1-247-819-00	CARBON	330	5%	1/6W	
R412	1-247-819-00	CARBON	330	5%	1/6W	
R413	1-247-875-00	CARBON	68K	5%	1/6W	
R414	1-247-875-00	CARBON	68K	5%	1/6W	
R415	1-247-895-00	CARBON	470K	5%	1/6W	
R418	1-247-855-00	CARBON	10K	5%	1/6W	

Ref.No	Part No.	Description				Remark
R419	1-247-847-00	CARBON	4.7K	5%	1/6W	
R420	1-247-847-00	CARBON	4.7K	5%	1/6W	
R502	⚠.1-247-737-11	CARBON	68	5%	1/2W	F
R503	1-247-831-00	CARBON	1K	5%	1/6W	
R504	⚠.1-212-857-51	FUSIBLE	10	5%	1/4W	F
R505	⚠.1-247-815-00	CARBON	220	5%	1/6W	
R506	1-247-815-00	CARBON	220	5%	1/6W	
R600	1-247-831-00	CARBON	1K	5%	1/6W	
R601	1-247-847-00	CARBON	4.7K	5%	1/6W	
R602	1-247-854-00	CARBON	9.1K	5%	1/6W	
R603	1-247-861-00	CARBON	18K	5%	1/6W	
R608	1-247-887-00	CARBON	220K	5%	1/6W	
R609	1-247-887-00	CARBON	220K	5%	1/6W	
R610	1-247-855-00	CARBON	10K	5%	1/6W	
R611	1-247-855-00	CARBON	10K	5%	1/6W	
R612	1-247-873-00	CARBON	56K	5%	1/6W	
R613	1-247-807-00	CARBON	100	5%	1/6W	
R615	1-247-849-00	CARBON	5.6K	5%	1/6W	
R616	1-247-815-00	CARBON	220	5%	1/6W	
R619	1-247-855-00	CARBON	10K	5%	1/6W	
R620	1-247-855-00	CARBON	10K	5%	1/6W	
R621	1-247-867-00	CARBON	33K	5%	1/6W	
R622	1-247-863-00	CARBON	22K	5%	1/6W	
R623	1-247-863-00	CARBON	22K	5%	1/6W	
R700	1-247-841-00	CARBON	2.7K	5%	1/6W	
R701	1-249-421-11	CARBON	2.2K	5%	1/6W	
R703	1-247-807-00	CARBON	100	5%	1/6W	
R704	1-247-863-00	CARBON	22K	5%	1/6W	
R707	1-247-847-00	CARBON	4.7K	5%	1/6W	
R708	1-247-859-00	CARBON	15K	5%	1/6W	
R709	1-247-857-00	CARBON	12K	5%	1/6W	
R710	1-247-857-00	CARBON	12K	5%	1/6W	
R711	1-247-857-00	CARBON	12K	5%	1/6W	
R712	1-247-867-00	CARBON	33K	5%	1/6W	
R713	1-247-825-00	CARBON	560	5%	1/6W	
R714	1-247-837-00	CARBON	1.8K	5%	1/6W	
R715	1-249-421-11	CARBON	2.2K	5%	1/6W	
R717	1-247-853-00	CARBON	8.2K	5%	1/6W	
R719	1-247-849-00	CARBON	5.6K	5%	1/6W	
R720	1-247-867-00	CARBON	33K	5%	1/6W	
R721	1-247-831-00	CARBON	1K	5%	1/6W	
R800	1-247-841-00	CARBON	2.7K	5%	1/6W	
R801	1-249-421-11	CARBON	2.2K	5%	1/6W	
R803	1-247-807-00	CARBON	100	5%	1/6W	
R804	1-247-863-00	CARBON	22K	5%	1/6W	
R807	1-247-847-00	CARBON	4.7K	5%	1/6W	
R808	1-247-859-00	CARBON	15K	5%	1/6W	
R809	1-247-857-00	CARBON	12K	5%	1/6W	
R810	1-247-857-00	CARBON	12K	5%	1/6W	
R811	1-247-857-00	CARBON	12K	5%	1/6W	
R812	1-247-867-00	CARBON	33K	5%	1/6W	
R813	1-247-825-00	CARBON	560	5%	1/6W	
R814	1-247-837-00	CARBON	1.8K	5%	1/6W	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

AU-8 SS-32

Ref.No	Part No.	Description				Remark
R815	1-249-421-11	CARBON	2.2K	5%	1/6W	
R817	1-247-853-00	CARBON	8.2K	5%	1/6W	
R819	1-247-849-00	CARBON	5.6K	5%	1/6W	
R820	1-247-867-00	CARBON	33K	5%	1/6W	
R821	1-247-831-00	CARBON	1K	5%	1/6W	
R900	1-247-858-00	CARBON	13K	5%	1/6W	
R904	1-247-863-00	CARBON	22K	5%	1/6W	
R905	1-247-879-00	CARBON	100K	5%	1/6W	
R908	1-247-825-00	CARBON	560	5%	1/6W	
R909	1-215-423-00	METAL	1.2K	1%	1/6W	
R910	1-247-857-00	CARBON	12K	5%	1/6W	
R911	1-247-855-00	CARBON	10K	5%	1/6W	
R914	1-249-421-11	CARBON	2.2K	5%	1/6W	
R915	1-247-783-00	CARBON	10	5%	1/6W	
R916	1-247-859-00	CARBON	15K	5%	1/6W	
R918	1-247-875-00	CARBON	68K	5%	1/6W	
R919	1-215-403-00	METAL	180	1%	1/6W	
R920	1-247-885-00	CARBON	180K	5%	1/6W	
R921	1-247-819-00	CARBON	330	5%	1/6W	
R923	1-247-859-00	CARBON	15K	5%	1/6W	
R924	1-247-824-00	CARBON	510	5%	1/6W	
R925	⚠.1-244-837-51	CARBON	33	5%	1/2W	
R926	1-247-859-00	CARBON	15K	5%	1/6W	
R927	⚠.1-246-413-25	CARBON	3.3	5%	1/4W	
R928	1-247-855-00	CARBON	10K	5%	1/6W	
R929	1-249-421-11	CARBON	2.2K	5%	1/6W	
R930	1-247-849-00	CARBON	5.6K	5%	1/6W	
R931	1-247-804-00	CARBON	75	5%	1/6W	
R932	1-247-871-00	CARBON	47K	5%	1/6W	
R933	1-247-871-00	CARBON	47K	5%	1/6W	
R934	1-247-847-00	CARBON	4.7K	5%	1/6W	
R935	1-215-437-00	METAL	4.7K	1%	1/6W	
R936	1-247-821-00	CARBON	390	5%	1/6W	
R937	1-247-895-00	CARBON	470K	5%	1/6W	
R938	1-247-847-00	CARBON	4.7K	5%	1/6W	
R939	1-247-835-00	CARBON	1.5K	5%	1/6W	
R940	1-215-445-00	METAL	10K	1%	1/6W	
R980	1-247-887-00	CARBON	220K	5%	1/6W	
R999	1-247-861-00	CARBON	18K	5%	1/6W	
		VARIABLE RESISTOR				
RV801	1-228-996-00	RES, ADJ, CARBON 47K				
RV901	1-228-920-00	RES, ADJ, CARBON 2.2K				
RV902	1-224-662-00	RES, ADJ, METAL FILM 220K				
		TRANSFORMER				
T900	1-433-237-00	TRANSFORMER, OSCILLATOR				
		CRYSTAL				
X001	1-567-262-11	VIBRATOR, CRYSTAL				

****

Ref.No	Part No.	Description				Remark
	*A-6715-253-A	SS-32 BOARD, COMPLETE **********************				
	3-684-364-01	SHEET INSULATING, SS				
	4-818-403-00	RIVET, NYLON				
	7-685-646-71	SCREW +BVTP 3X8 TYPE2 IT-3				
		CAPACITOR				
C002	1-123-318-00	ELECT	33MF	20%	16V	
C003	1-161-057-00	CERAMIC	0.033MF	10%	25V	
C004	1-130-483-00	MYLAR	0.01MF	5%	50V	
C005	1-127-466-00	ELECT(SOLID)	0.1MF	5%	16V	
C006	1-129-794-00	FILM	0.0033MF	5%	100V	
C007	1-129-794-00	FILM	0.0033MF	5%	100V	
C008	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C009	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C010	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C011	1-161-057-00	CERAMIC	0.033MF	10%	25V	
C012	1-123-381-00	ELECT	2.2MF	20%	50V	
C013	1-161-057-00	CERAMIC	0.033MF	10%	25V	
C014	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C016	1-123-333-00	ELECT	100MF	20%	16V	
C017	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C019	1-123-330-00	ELECT	22MF	20%	16V	
C020	1-102-963-00	CERAMIC	33PF	5%	50V	
C021	1-102-963-00	CERAMIC	33PF	5%	50V	
C023	1-127-469-00	ELECT(SOLID)	0.33MF	5%	16V	
C025	1-123-330-00	ELECT	22MF	20%	16V	
C026	1-161-057-00	CERAMIC	0.033MF	10%	25V	
C028	1-130-532-51	MYLAR	0.22MF	10%	50V	
C100	1-161-057-00	CERAMIC	0.033MF	10%	50V	
C105	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C106	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C107	1-161-013-00	CERAMIC	0.01MF	10%	25V	
C501	1-102-961-00	CERAMIC	27PF	5%	50V	
C502	1-102-961-00	CERAMIC	27PF	5%	50V	
C503	1-123-306-00	ELECT	47MF	20%	10V	
C504	1-130-483-00	MYLAR	0.01MF	5%	50V	
C505	1-130-483-00	MYLAR	0.01MF	5%	50V	
C506	1-123-382-00	ELECT	3.3MF	20%	50V	
C507	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C508	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C509	1-123-382-00	ELECT	3.3MF	20%	50V	
C510	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C511	1-123-382-00	ELECT	3.3MF	20%	50V	
C512	1-130-479-00	MYLAR	0.0047MF	5%	50V	
C513	1-123-298-00	ELECT	470MF	20%	6.3V	
C514	1-123-333-00	ELECT	100MF	20%	16V	
C515	1-123-381-00	ELECT	2.2MF	20%	50V	
C516	1-131-369-00	TANTALUM	4.7MF	10%	16V	
C517	1-161-059-00	CERAMIC	0.047MF	10%	25V	
C518	1-123-381-00	ELECT	2.2MF	20%	50V	
C519	1-131-369-00	TANTALUM	4.7MF	10%	16V	

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
C520	1-161-059-00	CERAMIC	0.047MF	10%	25V
C521	1-127-469-00	ELECT(SOLID)	0.33MF	5%	16V
C523	1-123-380-00	ELECT	1MF	20%	50V
C524	1-161-053-00	CERAMIC	0.015MF	10%	25V
C525	1-161-023-00	CERAMIC	0.068MF	10%	25V
C526	1-123-369-00	ELECT	4.7MF	20%	25V
C527	1-124-429-00	ELECT	0.68MF	20%	50V
C528	1-161-059-00	CERAMIC	0.047MF	10%	25V
C529	1-161-059-00	CERAMIC	0.047MF	10%	25V
C530	1-127-468-00	ELECT(SOLID)	0.22MF	5%	16V
C531	1-108-582-00	MYLAR	0.013MF	5%	50V
C532	1-102-120-00	CERAMIC	0.0018MF	10%	50V
C533	1-161-059-00	CERAMIC	0.047MF	10%	25V
C534	1-161-054-00	CERAMIC	0.018MF	10%	25V
C535	1-161-013-00	CERAMIC	0.01MF	10%	25V
C536	1-161-048-00	CERAMIC	0.0056MF	10%	25V
C537	1-161-055-00	CERAMIC	0.022MF	10%	25V
C538	1-123-380-00	ELECT	1MF	20%	50V
C801	1-123-381-00	ELECT	2.2MF	20%	50V
C802	1-123-332-00	ELECT	47MF	20%	16V
C803	1-123-332-00	ELECT	47MF	20%	16V
C804	1-130-474-00	MYLAR	0.0018MF	5%	50V
C805	1-123-332-00	ELECT	47MF	20%	16V

FILTER

Ref.No	Part No.	Description
CF001	1-527-992-11	OSCILLATOR, CERAMIC

CONNECTOR

Ref.No	Part No.	Description
CN001	*1-560-890-00	PIN, CONNECTOR 2P
CN002	*1-560-890-00	PIN, CONNECTOR 2P
CN003	*1-560-890-00	PIN, CONNECTOR 2P
CN004	*1-560-891-00	PIN, CONNECTOR 3P
CN006	*1-560-890-00	PIN, CONNECTOR 2P
CN007	*1-560-890-00	PIN, CONNECTOR 2P
CN008	*1-560-893-00	PIN, CONNECTOR 5P
CN009	*1-560-894-00	PIN, CONNECTOR 6P
CN010	*1-560-895-00	PIN, CONNECTOR 7P
CN011	*1-560-900-00	PIN, CONNECTOR 12P
CN012	*1-560-890-00	PIN, CONNECTOR 2P
CN013	*1-560-895-00	PIN, CONNECTOR 7P
CN014	*1-560-896-00	PIN, CONNECTOR 8P
CN015	*1-560-890-00	PIN, CONNECTOR 2P
CN016	*1-560-892-00	PIN, CONNECTOR 4P
CN501	*1-560-894-00	PIN, CONNECTOR 6P
CN502	*1-560-890-00	PIN, CONNECTOR 2P
CN503	*1-560-466-00	PIN, CONNECTOR 3P
CN504	*1-560-892-00	PIN, CONNECTOR 4P
CN505	*1-560-892-00	PIN, CONNECTOR 4P
CN506	*1-560-892-00	PIN, CONNECTOR 4P
CN507	*1-560-892-00	PIN, CONNECTOR 4P
CN508	*1-560-891-00	PIN, CONNECTOR 3P

DIODE

Ref.No	Part No.	Description	Remark
D002	8-719-911-19	DIODE 1SS119	
D004	8-719-911-19	DIODE 1SS119	
D005	8-719-911-19	DIODE 1SS119	
D006	8-719-911-19	DIODE 1SS119	
D007	8-719-911-19	DIODE 1SS119	
D008	8-719-911-19	DIODE 1SS119	
D009	8-719-911-19	DIODE 1SS119	
D013	⚠.8-719-200-02	DIODE 10E-2	
D014	8-719-911-19	DIODE 1SS119	
D019	8-719-911-19	DIODE 1SS119	
D020	8-719-911-19	DIODE 1SS119	
D501	8-719-911-19	DIODE 1SS119	
D504	⚠.8-719-101-49	DIODE RD5.1EL2	
D505	8-719-911-19	DIODE 1SS119	
D506	8-719-911-19	DIODE 1SS119	
D507	8-719-911-19	DIODE 1SS119	
D509	8-719-911-19	DIODE 1SS119	
D551	8-719-100-35	DIODE RD5.6EB2	
D801	8-719-911-19	DIODE 1SS119	
D802	8-719-911-19	DIODE 1SS119	
D803	8-719-911-19	DIODE 1SS119	
D804	8-719-911-19	DIODE 1SS119	

IC

Ref.No	Part No.	Description
IC001	⚠.8-759-915-69	IC MB88551-162G
IC003	8-759-103-93	IC UPC393C
IC004	8-759-800-72	IC LA7205
IC005	⚠.8-759-600-24	IC M54543L
IC501	8-751-941-05	IC CX194B-5
IC502	8-759-132-40	IC UPC324C
IC503	8-759-132-40	IC UPC324C
IC504	8-759-145-58	IC UPC4558C
IC801	8-759-135-80	IC UPC358C

COIL

Ref.No	Part No.	Description
L001	⚠.1-408-615-00	MICRO INDUCTOR 100UH

TRANSISTOR

Ref.No	Part No.	Description
Q001	8-729-245-83	TRANSISTOR 2SC2458
Q002	⚠.8-729-204-82	TRANSISTOR 2SA1048
Q003	⚠.8-729-103-41	TRANSISTOR 2SB734-4
Q004	8-729-900-61	TRANSISTOR DTA114ES
Q005	8-729-900-65	TRANSISTOR DTA144ES
Q006	8-729-900-65	TRANSISTOR DTA144ES
Q009	8-729-245-83	TRANSISTOR 2SC2458
Q010	8-729-245-83	TRANSISTOR 2SC2458
Q011	8-729-245-83	TRANSISTOR 2SC2458
Q012	8-729-245-83	TRANSISTOR 2SC2458
Q013	8-729-900-89	TRANSISTOR DTC144ES
Q015	8-729-245-83	TRANSISTOR 2SC2458
Q016	⚠.8-729-204-82	TRANSISTOR 2SA1048

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

SS-32

Ref.No	Part No.	Description	Remark
Q017	8-729-245-83	TRANSISTOR 2SC2458	
Q018	⚠.8-729-177-42	TRANSISTOR 2SD774	
Q019	8-729-204-83	TRANSISTOR 2SA1048	
Q020	⚠.8-729-177-42	TRANSISTOR 2SD774	
Q021	⚠.8-729-245-83	TRANSISTOR 2SC2458	
Q022	8-729-245-83	TRANSISTOR 2SC2458	
Q023	⚠.8-729-178-53	TRANSISTOR 2SC2785	
Q024	8-729-245-83	TRANSISTOR 2SC2458	
Q025	⚠.8-729-801-73	TRANSISTOR 2SC2603	
Q026	⚠.8-729-106-01	TRANSISTOR 2SD882	
Q027	8-729-204-83	TRANSISTOR 2SA1048	
Q028	8-729-900-89	TRANSISTOR DTC144ES	
Q029	⚠.8-729-204-82	TRANSISTOR 2SA1048	
Q030	⚠.8-729-606-33	TRANSISTOR 2SC2603	
Q031	⚠.8-729-106-01	TRANSISTOR 2SD882	
Q032	⚠.8-729-177-32	TRANSISTOR 2SD773	
Q033	⚠.8-729-116-42	TRANSISTOR 2SD1164	
Q035	⚠.8-729-177-32	TRANSISTOR 2SD773	
Q036	⚠.8-729-116-42	TRANSISTOR 2SD1164	
Q037	8-729-900-89	TRANSISTOR DTC144ES	
Q039	8-729-900-80	TRANSISTOR DTC114ES	
Q040	8-729-245-83	TRANSISTOR 2SC2458	
Q041	8-729-245-83	TRANSISTOR 2SC2458	
Q501	8-729-245-83	TRANSISTOR 2SC2458	
Q502	8-729-900-89	TRANSISTOR DTC144ES	
Q503	8-729-900-89	TRANSISTOR DTC144ES	
Q504	8-729-900-89	TRANSISTOR DTC144ES	
Q506	8-729-900-89	TRANSISTOR DTC144ES	
Q507	8-729-245-83	TRANSISTOR 2SC2458	
Q508	8-729-900-89	TRANSISTOR DTC144ES	
Q509	8-729-900-61	TRANSISTOR DTA114ES	
Q510	8-729-900-61	TRANSISTOR DTA114ES	
Q801	8-729-900-89	TRANSISTOR DTC144ES	
Q802	8-729-900-80	TRANSISTOR DTC114ES	
Q803	8-729-900-89	TRANSISTOR DTC144ES	

RESISTOR

Ref.No	Part No.	Description				Remark
R001	1-247-847-00	CARBON	4.7K	5%	1/6W	
R002	1-247-847-00	CARBON	4.7K	5%	1/6W	
R004	1-247-847-00	CARBON	4.7K	5%	1/6W	
R009	1-247-863-00	CARBON	22K	5%	1/6W	
R010	1-247-863-00	CARBON	22K	5%	1/6W	
R011	1-247-847-00	CARBON	4.7K	5%	1/6W	
R012	1-247-847-00	CARBON	4.7K	5%	1/6W	
R013	1-247-875-00	CARBON	68K	5%	1/6W	
R014	1-247-855-00	CARBON	10K	5%	1/6W	
R015	1-247-879-00	CARBON	100K	5%	1/6W	
R016	1-247-886-00	CARBON	200K	5%	1/6W	
R018	1-247-831-00	CARBON	1K	5%	1/6W	
R019	1-247-895-00	CARBON	470K	5%	1/6W	
R020	1-247-903-00	CARBON	1M	5%	1/6W	
R022	1-247-838-00	CARBON	2K	5%	1/6W	
R023	1-247-859-00	CARBON	15K	5%	1/6W	

Ref.No	Part No.	Description				Remark
R024	1-247-838-00	CARBON	2K	5%	1/6W	
R025	1-247-855-00	CARBON	10K	5%	1/6W	
R026	1-247-841-00	CARBON	2.7K	5%	1/6W	
R027	1-247-879-00	CARBON	100K	5%	1/6W	
R028	1-247-870-00	CARBON	43K	5%	1/6W	
R029	1-247-851-00	CARBON	6.8K	5%	1/6W	
R030	1-247-831-00	CARBON	1K	5%	1/6W	
R031	1-247-831-00	CARBON	1K	5%	1/6W	
R032	1-247-831-00	CARBON	1K	5%	1/6W	
R035	1-247-831-00	CARBON	1K	5%	1/6W	
R038	1-247-843-00	CARBON	3.3K	5%	1/6W	
R041	1-247-861-00	CARBON	18K	5%	1/6W	
R042	1-247-862-00	CARBON	20K	5%	1/6W	
R043	1-247-873-00	CARBON	56K	5%	1/6W	
R044	1-247-855-00	CARBON	10K	5%	1/6W	
R047	1-247-807-00	CARBON	100	5%	1/6W	
R048	1-247-807-00	CARBON	100	5%	1/6W	
R049	1-247-807-00	CARBON	100	5%	1/6W	
R050	1-247-863-00	CARBON	22K	5%	1/6W	
R051	1-247-867-00	CARBON	33K	5%	1/6W	
R052	⚠.1-212-360-00	METAL OXIDE	1	5%	1W	F
R053	1-247-863-00	CARBON	22K	5%	1/6W	
R054	1-247-857-00	CARBON	12K	5%	1/6W	
R057	1-247-855-00	CARBON	10K	5%	1/6W	
R058	1-247-831-00	CARBON	1K	5%	1/6W	
R059	⚠.1-212-366-00	METAL OXIDE	3.3	5%	1W	F
R060	1-247-831-00	CARBON	1K	5%	1/6W	
R061	1-247-895-00	CARBON	470K	5%	1/6W	
R063	1-247-867-00	CARBON	33K	5%	1/6W	
R064	1-247-871-00	CARBON	47K	5%	1/6W	
R065	⚠.1-212-360-00	METAL OXIDE	1	5%	1W	F
R068	1-247-855-00	CARBON	10K	5%	1/6W	
R069	1-247-845-00	CARBON	3.9K	5%	1/6W	
R070	1-247-879-00	CARBON	100K	5%	1/6W	
R071	1-247-844-00	CARBON	3.6K	5%	1/6W	
R072	1-249-421-11	CARBON	2.2K	5%	1/6W	
R073	1-247-863-00	CARBON	22K	5%	1/6W	
R076	⚠.1-212-849-00	FUSIBLE	4.7	5%	1/4W	F
R077	⚠.1-212-849-00	FUSIBLE	4.7	5%	1/4W	F
R078	⚠.1-212-849-00	FUSIBLE	4.7	5%	1/4W	F
R079	1-247-831-00	CARBON	1K	5%	1/6W	
R080	1-247-871-00	CARBON	47K	5%	1/6W	
R082	1-247-849-00	CARBON	5.6K	5%	1/6W	
R084	1-247-871-00	CARBON	47K	5%	1/6W	
R085	1-247-814-00	CARBON	200	5%	1/6W	
R086	1-247-855-00	CARBON	10K	5%	1/6W	
R087	1-247-831-00	CARBON	1K	5%	1/6W	
R090	1-247-827-00	CARBON	680	5%	1/6W	
R091	1-247-807-00	CARBON	100	5%	1/6W	
R092	1-247-863-00	CARBON	22K	5%	1/6W	
R093	1-247-847-00	CARBON	4.7K	5%	1/6W	
R094	1-247-859-00	CARBON	15K	5%	1/6W	
R095	1-247-831-00	CARBON	1K	5%	1/6W	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specifed.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R096	1-247-847-00	CARBON	4.7K	5%	1/6W	
R097	1-247-879-00	CARBON	100K	5%	1/6W	
R100	1-247-843-00	CARBON	3.3K	5%	1/6W	
R109	1-247-903-00	CARBON	1M	5%	1/6W	
R110	1-247-855-00	CARBON	10K	5%	1/6W	
R111	1-247-895-00	CARBON	470K	5%	1/6W	
R112	1-247-859-00	CARBON	15K	5%	1/6W	
R113	1-247-869-00	CARBON	39K	5%	1/6W	
R114	1-247-865-00	CARBON	27K	5%	1/6W	
R115	1-247-855-00	CARBON	10K	5%	1/6W	
R501	1-247-879-00	CARBON	100K	5%	1/6W	
R502	1-247-844-00	CARBON	3.6K	5%	1/6W	
R503	1-247-879-00	CARBON	100K	5%	1/6W	
R504	1-247-844-00	CARBON	3.6K	5%	1/6W	
R505 ⚠	1-213-080-00	FUSIBLE	68	5%	1W	F
R507	1-247-855-00	CARBON	10K	5%	1/6W	
R508	1-247-863-00	CARBON	22K	5%	1/6W	
R509	1-247-863-00	CARBON	22K	5%	1/6W	
R510	1-247-831-00	CARBON	1K	5%	1/6W	
R511	1-247-870-00	CARBON	43K	5%	1/6W	
R512	1-247-875-00	CARBON	68K	5%	1/6W	
R513	1-247-877-00	CARBON	82K	5%	1/6W	
R514	1-247-858-00	CARBON	13K	5%	1/6W	
R515	1-247-848-00	CARBON	5.1K	5%	1/6W	
R516	1-247-864-00	CARBON	24K	5%	1/6W	
R517	1-247-862-00	CARBON	20K	5%	1/6W	
R519 ⚠	1-213-072-00	FUSIBLE	33	5%	1W	F
R520	1-247-825-00	CARBON	560	5%	1/6W	
R521	1-247-903-00	CARBON	1M	5%	1/6W	
R522	1-247-855-00	CARBON	10K	5%	1/6W	
R523	1-247-831-00	CARBON	1K	5%	1/6W	
R524	1-247-903-00	CARBON	1M	5%	1/6W	
R525	1-247-831-00	CARBON	1K	5%	1/6W	
R526	1-247-855-00	CARBON	10K	5%	1/6W	
R527	1-247-841-00	CARBON	2.7K	5%	1/6W	
R528	1-247-883-00	CARBON	150K	5%	1/6W	
R529	1-247-875-00	CARBON	68K	5%	1/6W	
R530	1-247-862-00	CARBON	20K	5%	1/6W	
R531	1-247-889-00	CARBON	270K	5%	1/6W	
R532	1-247-841-00	CARBON	2.7K	5%	1/6W	
R533	1-247-873-00	CARBON	56K	5%	1/6W	
R534	1-247-873-00	CARBON	56K	5%	1/6W	
R535	1-247-887-00	CARBON	220K	5%	1/6W	
R536	1-247-875-00	CARBON	68K	5%	1/6W	
R537	1-249-421-11	CARBON	2.2K	5%	1/6W	
R538	1-247-900-00	CARBON	750K	5%	1/6W	
R539	1-247-855-00	CARBON	10K	5%	1/6W	
R540	1-247-840-00	CARBON	2.4K	5%	1/6W	
R541	1-249-421-11	CARBON	2.2K	5%	1/6W	
R542	1-247-875-00	CARBON	68K	5%	1/6W	
R543	1-247-850-00	CARBON	6.2K	5%	1/6W	
R544	1-247-875-00	CARBON	68K	5%	1/6W	
R545	1-247-854-00	CARBON	9.1K	5%	1/6W	

Ref.No	Part No.	Description				Remark
R546	1-247-887-00	CARBON	220K	5%	1/6W	
R547	1-247-867-00	CARBON	33K	5%	1/6W	
R548	1-247-883-00	CARBON	150K	5%	1/6W	
R549	1-247-883-00	CARBON	150K	5%	1/6W	
R550	1-247-859-00	CARBON	15K	5%	1/6W	
R551	1-247-887-00	CARBON	220K	5%	1/6W	
R552	1-247-897-00	CARBON	560K	5%	1/6W	
R553	1-247-903-00	CARBON	1M	5%	1/6W	
R554	1-247-867-00	CARBON	33K	5%	1/6W	
R555	1-247-876-00	CARBON	75K	5%	1/6W	
R556	1-247-867-00	CARBON	33K	5%	1/6W	
R557	1-247-879-00	CARBON	100K	5%	1/6W	
R558	1-247-879-00	CARBON	100K	5%	1/6W	
R559	1-247-847-00	CARBON	4.7K	5%	1/6W	
R560	1-247-879-00	CARBON	100K	5%	1/6W	
R561	1-247-879-00	CARBON	100K	5%	1/6W	
R562	1-247-855-00	CARBON	10K	5%	1/6W	
R563	1-247-859-00	CARBON	15K	5%	1/6W	
R564	1-247-872-00	CARBON	51K	5%	1/6W	
R565	1-247-855-00	CARBON	10K	5%	1/6W	
R566	1-247-847-00	CARBON	4.7K	5%	1/6W	
R567	1-247-879-00	CARBON	100K	5%	1/6W	
R568	1-247-879-00	CARBON	100K	5%	1/6W	
R570	1-247-831-00	CARBON	1K	5%	1/6W	
R572	1-247-847-00	CARBON	4.7K	5%	1/6W	
R573	1-247-825-00	CARBON	560	5%	1/6W	
R801	1-247-831-00	CARBON	1K	5%	1/6W	
R802	1-247-829-00	CARBON	820	5%	1/6W	
R803	1-247-885-00	CARBON	180K	5%	1/6W	
R804	1-247-859-00	CARBON	15K	5%	1/6W	
R805	1-247-844-00	CARBON	3.6K	5%	1/6W	
R806	1-247-903-00	CARBON	1M	5%	1/6W	
R807	1-247-831-00	CARBON	1K	5%	1/6W	
R808	1-247-835-00	CARBON	1.5K	5%	1/6W	
R809	1-247-831-00	CARBON	1K	5%	1/6W	
R810	1-247-864-00	CARBON	24K	5%	1/6W	
R811	1-247-863-00	CARBON	22K	5%	1/6W	
R812	1-247-883-00	CARBON	150K	5%	1/6W	
R813	1-247-835-00	CARBON	1.5K	5%	1/6W	
R814	1-247-829-00	CARBON	820	5%	1/6W	
R815	1-247-847-00	CARBON	4.7K	5%	1/6W	
R816	1-247-879-00	CARBON	100K	5%	1/6W	

VARIABLE RESISTOR

RV501	1-228-996-00	RES, ADJ, CARBON 47K
RV502	1-228-996-00	RES, ADJ, CARBON 47K
RV503	1-228-996-00	RES, ADJ, CARBON 47K
RV504	1-228-995-00	RES, ADJ, CARBON 22K
RV505	1-228-991-00	RES, ADJ, CARBON 2.2K
RV506	1-228-993-00	RES, ADJ, CARBON 4.7K
RV507	1-228-989-00	RES, ADJ, CARBON 470
RV508	1-228-996-00	RES, ADJ, CARBON 47K

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
	*A-6717-395-B	FU-38 BOARD, COMPLETE **********************	
	*2-283-410-00	HOLDER (A), LED	
		CAPACITOR	
C101	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C200	1-123-612-00	ELECT 2.2MF 20% 50V	
		DIODE	
D101	8-719-812-33	DIODE TLG123A	
D102	8-719-000-06	DIODE MC921	
D103	8-719-911-19	DIODE 1SS119	
D105	8-719-000-06	DIODE MC921	
D107	8-719-911-19	DIODE 1SS119	
D200	8-719-911-19	DIODE 1SS119	
		IC	
IC101	8-741-131-70	IC BX1317	
		TRANSISTOR	
Q101	⚠8-729-900-89	TRANSISTOR DTC144ES	
Q201	8-729-900-33	TRANSISTOR DTC144EF	
Q202	8-729-900-39	TRANSISTOR DTA124EF	
Q203	8-729-900-33	TRANSISTOR DTC144EF	
Q204	8-729-178-54	TRANSISTOR 2SC2785	
		RESISTOR	
R101	1-247-833-00	CARBON 1.2K 5% 1/6W	
R102	1-247-837-00	CARBON 1.8K 5% 1/6W	
R103	1-247-843-00	CARBON 3.3K 5% 1/6W	
R104	1-247-854-00	CARBON 9.1K 5% 1/6W	
R105	1-247-833-00	CARBON 1.2K 5% 1/6W	
R106	1-247-837-00	CARBON 1.8K 5% 1/6W	
R107	1-247-843-00	CARBON 3.3K 5% 1/6W	
R108	1-247-854-00	CARBON 9.1K 5% 1/6W	
R109	1-247-825-00	CARBON 560 5% 1/6W	
R110	1-247-831-00	CARBON 1K 5% 1/6W	
R152	1-247-855-00	CARBON 10K 5% 1/6W	
R153	1-247-847-00	CARBON 4.7K 5% 1/6W	
R200	1-247-873-00	CARBON 56K 5% 1/6W	
R201	1-247-825-00	CARBON 560 5% 1/6W	
R202	1-247-863-00	CARBON 22K 5% 1/6W	
		VARIABLE RESISTOR	
RV101	1-230-431-11	RES, VAR, CARBON 100K	
RV151	1-230-613-11	RES, VAR, CARBON 5K	
		SWITCH	
S101	1-554-174-00	SWITCH, KEY BOARD	
S102	1-554-174-00	SWITCH, KEY BOARD	
S103	1-554-174-00	SWITCH, KEY BOARD	
S104	1-554-088-00	SWITCH, KEY BOARD	

Ref.No	Part No.	Description	Remark
S105	1-554-174-00	SWITCH, KEY BOARD	
S106	1-554-174-00	SWITCH, KEY BOARD	
S107	1-554-174-00	SWITCH, KEY BOARD	
S108	1-554-174-00	SWITCH, KEY BOARD	
S109	1-554-174-00	SWITCH, KEY BOARD	
S110	1-554-174-00	SWITCH, KEY BOARD	
S111	1-553-751-00	SWITCH, SLIDE	
S112	1-553-754-00	SWITCH, SLIDE	
S113	1-553-716-00	SWITCH, SLIDE	

****

Ref.No	Part No.	Description	Remark
	*A-6721-231-A	TU-76 BOARD, COMPLETE **********************	
	*3-684-399-01	CASE (MAIN), SHIELD, TU	
	*3-685-221-01	LID, SHIELD CASE, TU	
	*3-685-222-01	LID, REAR, SHIELD CASE, TU	
		CAPACITOR	
C101	1-123-357-00	ELECT 22MF 20% 50V	
C102	1-102-112-00	CERAMIC 330PF 10% 50V	
C103	1-102-112-00	CERAMIC 330PF 10% 50V	
C104	1-102-112-00	CERAMIC 330PF 10% 50V	
C105	1-101-004-00	CERAMIC 0.01MF 50V	
C106	1-123-307-00	ELECT 100MF 20% 10V	
C107	1-123-330-00	ELECT 22MF 20% 16V	
C108	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C110	1-130-776-00	FILM 0.47MF 10% 63V	
C111	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C201	1-102-634-11	CERAMIC 8PF 0.5PF 50V	
C202	1-102-637-00	CERAMIC 12PF 5% 50V	
C203	1-101-004-00	CERAMIC 0.01MF 50V	
C204	1-102-121-00	CERAMIC 0.0022MF 10% 50V	
C205	1-102-121-00	CERAMIC 0.0022MF 10% 50V	
C206	1-102-121-00	CERAMIC 0.0022MF 10% 50V	
C207	1-102-121-00	CERAMIC 0.0022MF 10% 50V	
C208	1-102-121-00	CERAMIC 0.0022MF 10% 50V	
C209	1-102-121-00	CERAMIC 0.0022MF 10% 50V	
C210	1-102-112-00	CERAMIC 330PF 10% 50V	
C211	1-102-851-00	CERAMIC 15PF 5% 50V	
C212	1-102-525-00	CERAMIC 68PF 5% 50V	
C213	1-102-074-00	CERAMIC 0.001MF 10% 50V	
C215	1-102-074-00	CERAMIC 0.001MF 10% 50V	
C216	1-102-114-00	CERAMIC 470PF 10% 50V	
C217	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C218	1-161-059-00	CERAMIC 0.047MF 10% 25V	
C219	1-123-318-00	ELECT 33MF 20% 10V	
C220	1-102-121-00	CERAMIC 0.0022MF 10% 50V	
C221	1-102-525-00	CERAMIC 68PF 5% 50V	
C222	1-102-510-00	CERAMIC 12PF 5% 50V	
C223	1-101-837-00	CERAMIC 0.5PF 0.25PF 50V	
C224	1-102-525-00	CERAMIC 68PF 5% 50V	
C225	1-101-837-00	CERAMIC 0.5PF 0.25PF 50V	
C226	1-102-510-00	CERAMIC 12PF 5% 50V	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
C227	1-161-013-00	CERAMIC	0.01MF	10%	25V
C228	1-123-379-00	ELECT	0.47MF	20%	50V
C229	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C230	1-123-380-00	ELECT	1MF	20%	50V
C231	1-123-356-00	ELECT	10MF	20%	16V
C232	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C233	1-121-257-00	ELECT	4.7MF		16V
C234	1-102-884-00	CERAMIC	33PF	5%	50V
C235	1-123-381-00	ELECT	2.2MF	20%	50V
C236	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C238	1-102-759-00	CERAMIC	62PF	5%	50V
C239	1-102-439-61	CERAMIC	2PF	5%	50V
C240	1-102-951-00	CERAMIC	15PF	5%	50V
C241	1-123-307-00	ELECT	100MF	20%	10V
C243	1-102-074-00	CERAMIC	0.001MF	10%	50V
C244	1-130-478-00	MYLAR	0.0039MF	5%	50V
C245	1-123-307-00	ELECT	100MF	20%	10V
C257	1-123-356-00	ELECT	10MF	20%	16V
C551	1-123-369-00	ELECT	4.7MF	20%	25V
C552	1-123-356-00	ELECT	10MF	20%	16V
C553	1-123-356-00	ELECT	10MF	20%	16V
C556	1-123-330-00	ELECT	22MF	20%	16V
C560	1-130-514-00	MYLAR	0.0068MF	10%	50V
C561	1-136-147-00	MYLAR	0.0033MF	10%	50V
C602	1-123-356-00	ELECT	10MF	20%	16V
C603	1-123-318-00	ELECT	33MF	20%	16V
C604	1-123-356-00	ELECT	10MF	20%	16V
C607	1-161-052-00	CERAMIC	0.012MF	10%	25V
C608	1-161-052-00	CERAMIC	0.012MF	10%	25V
C609	1-102-114-00	CERAMIC	470PF	10%	50V
C610	1-102-114-00	CERAMIC	470PF	10%	50V
C611	1-161-059-00	CERAMIC	0.047MF	10%	25V
C613	1-123-356-00	ELECT	10MF	20%	16V
C615	1-123-356-00	ELECT	10MF	20%	16V
C618	1-123-318-00	ELECT	33MF	20%	16V
C702	1-123-382-00	ELECT	3.3MF	20%	50V
C703	1-161-059-00	CERAMIC	0.047MF	10%	25V
C704	1-123-306-00	ELECT	47MF	20%	6.3V
C801	1-123-379-00	ELECT	0.47MF	20%	50V
C802	1-136-147-00	MYLAR	0.0033MF	10%	50V
C803	1-123-379-00	ELECT	0.47MF	20%	50V
C810	1-161-059-00	CERAMIC	0.047MF	10%	25V
C902	1-123-318-00	ELECT	33MF	20%	16V

FILTER

Ref.No	Part No.	Description
CF201	1-527-943-00	FILTER, CERAMIC (4.5MHZ BPF)
CF202	1-409-332-00	CERAMIC TRAP (4.5MHZ)

CONNECTOR

Ref.No	Part No.	Description	Remark
CN101	*1-560-896-00	PIN, CONNECTOR 8P	
CN102	*1-560-895-00	PIN, CONNECTOR 7P	
CN103	*1-560-891-00	PIN, CONNECTOR 3P	
CN104	*1-560-892-00	PIN, CONNECTOR 4P	
CN105	*1-560-893-00	PIN, CONNECTOR 5P	
CN106	*1-560-899-00	PIN, CONNECTOR 11P	
CN107	*1-560-890-00	PIN, CONNECTOR 2P	
CN108	*1-560-896-00	PIN, CONNECTOR 8P	
CN109	*1-560-895-00	PIN, CONNECTOR 7P	
CN110	*1-560-893-00	PIN, CONNECTOR 5P	
CN111	*1-560-892-00	PIN, CONNECTOR 4P	
CN112	*1-560-892-00	PIN, CONNECTOR 4P	
CN113	*1-560-893-00	PIN, CONNECTOR 5P	

DIODE

Ref.No	Part No.	Description
D102	8-719-102-72	DIODE RD5.6EN3
D103	8-719-200-02	DIODE 10E-2
D104	8-719-101-04	DIODE RD33EB2
D109	8-719-101-25	DIODE RD39EB3
D201	8-719-911-19	DIODE 1SS119
D202	8-719-911-19	DIODE 1SS119
D210	8-719-911-19	DIODE 1SS119
D601	8-719-911-19	DIODE 1SS119
D602	8-719-911-19	DIODE 1SS119
D605	8-719-911-19	DIODE 1SS119
D606	8-719-911-19	DIODE 1SS119
D607	8-719-200-02	DIODE 10E-2
D608	8-719-200-02	DIODE 10E-2
D650	8-719-911-19	DIODE 1SS119
D651	8-719-911-19	DIODE 1SS119
D703	8-719-812-31	DIODE TLR123
D803	8-719-911-19	DIODE 1SS119
D804	8-719-911-19	DIODE 1SS119

IC

Ref.No	Part No.	Description
IC201	8-752-001-41	IC CX20014A
IC202	8-752-007-30	IC CX20073
IC601	8-759-135-80	IC UPC358C
IC901	8-752-320-28	IC CXK1003P

COIL

Ref.No	Part No.	Description
L201	1-410-073-11	MICRO INDUCTOR 0.22UH
L202	1-408-709-00	MICRO INDUCTOR 0.68UH
L203	1-408-602-00	MICRO INDUCTOR 8.2UH
L204	1-408-596-00	MICRO INDUCTOR 2.7UH
L205	1-408-602-00	MICRO INDUCTOR 8.2UH
L206	1-405-873-00	COIL, OSCILLATOR
L208	1-408-412-00	MICRO INDUCTOR 18UH
L209	1-408-411-00	MICRO INDUCTOR 15UH
L801	1-407-510-00	MICRO INDUCTOR 33MMH
L810	1-408-427-00	MICRO INDUCTOR 330UH

IC LINK

Ref.No	Part No.	Description
PS001	1-532-727-11	LINK, IC

TRANSISTOR

Ref.No	Part No.	Description
Q102	⚠8-729-965-22	TRANSISTOR 2SC1652

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

TU-76

Ref.No	Part No.	Description	Remark
Q104	8-729-245-83	TRANSISTOR 2SC2458	
Q109	8-729-177-43	TRANSISTOR 2SD774-3	
Q201	8-729-266-93	TRANSISTOR 2SC2669	
Q202	8-729-245-83	TRANSISTOR 2SC2458	
Q203	8-729-117-54	TRANSISTOR 2SA1175	
Q210	8-729-245-83	TRANSISTOR 2SC2458	
Q551	8-729-245-83	TRANSISTOR 2SC2458	
Q552	8-729-245-83	TRANSISTOR 2SC2458	
Q555	8-729-245-83	TRANSISTOR 2SC2458	
Q601	8-729-900-36	TRANSISTOR DTC124ES	
Q602	8-729-245-83	TRANSISTOR 2SC2458	
Q708	8-729-245-83	TRANSISTOR 2SC2458	
Q709	8-729-245-83	TRANSISTOR 2SC2458	
Q710	8-729-117-54	TRANSISTOR 2SA1175-F	
Q801	8-729-117-54	TRANSISTOR 2SA1175-F	
Q802	8-729-245-83	TRANSISTOR 2SC2458	

RESISTOR

Ref.No	Part No.	Description				Remark
R102	1-247-863-00	CARBON	22K	5%	1/6W	
R103	1-247-849-00	CARBON	5.6K	5%	1/6W	
R105	⚠.1-246-413-25	CARBON	3.3	5%	1/4W	
R106	1-247-829-00	CARBON	820	5%	1/6W	
R110	⚠.1-212-976-00	FUSIBLE	56	5%	1/2W	F
R111	1-247-889-00	CARBON	270K	5%	1/6W	
R113	1-247-855-00	CARBON	10K	5%	1/6W	
R114	1-247-855-00	CARBON	10K	5%	1/6W	
R201	1-247-857-00	CARBON	12K	5%	1/6W	
R202	1-247-855-00	CARBON	10K	5%	1/6W	
R203	1-247-803-00	CARBON	68	5%	1/6W	
R204	1-247-833-00	CARBON	1.2K	5%	1/6W	
R205	1-247-817-00	CARBON	270	5%	1/6W	
R206	1-247-801-00	CARBON	56	5%	1/6W	
R207	1-247-837-00	CARBON	1.8K	5%	1/6W	
R208	1-247-883-00	CARBON	150K	5%	1/6W	
R209	1-247-843-00	CARBON	3.3K	5%	1/6W	
R210	1-247-883-00	CARBON	150K	5%	1/6W	
R211	1-247-843-00	CARBON	3.3K	5%	1/6W	
R212	1-247-871-00	CARBON	47K	5%	1/6W	
R213	1-247-871-00	CARBON	47K	5%	1/6W	
R214	1-247-833-00	CARBON	1.2K	5%	1/6W	
R216	1-247-845-00	CARBON	3.9K	5%	1/6W	
R217	1-249-421-11	CARBON	2.2K	5%	1/6W	
R218	1-249-421-11	CARBON	2.2K	5%	1/6W	
R219	1-247-883-00	CARBON	150K	5%	1/6W	
R220	1-247-815-00	CARBON	220	5%	1/6W	
R221	1-249-421-11	CARBON	2.2K	5%	1/6W	
R223	1-247-819-00	CARBON	330	5%	1/6W	
R224	1-247-807-00	CARBON	100	5%	1/6W	
R225	1-247-827-00	CARBON	680	5%	1/6W	
R226	1-247-895-00	CARBON	470K	5%	1/6W	
R227	1-247-791-00	CARBON	22	5%	1/6W	
R229	1-247-807-00	CARBON	100	5%	1/6W	
R231	1-247-819-00	CARBON	330	5%	1/6W	
R232	1-247-817-00	CARBON	270	5%	1/6W	
R233	1-247-845-00	CARBON	3.9K	5%	1/6W	
R257	1-247-807-00	CARBON	100	5%	1/6W	
R258	1-247-827-00	CARBON	680	5%	1/6W	
R260	1-247-807-00	CARBON	100	5%	1/6W	
R553	1-247-850-00	CARBON	6.2K	5%	1/6W	
R554	1-247-850-00	CARBON	6.2K	5%	1/6W	
R555	1-249-421-11	CARBON	2.2K	5%	1/6W	
R556	1-247-843-00	CARBON	3.3K	5%	1/6W	
R557	1-247-873-00	CARBON	56K	5%	1/6W	
R558	1-247-859-00	CARBON	15K	5%	1/6W	
R559	1-247-843-00	CARBON	3.3K	5%	1/6W	
R561	1-247-843-00	CARBON	3.3K	5%	1/6W	
R566	1-249-421-11	CARBON	2.2K	5%	1/6W	
R602	1-247-861-00	CARBON	18K	5%	1/6W	
R603	1-247-851-00	CARBON	6.8K	5%	1/6W	
R604	1-247-863-00	CARBON	22K	5%	1/6W	
R605	1-247-875-00	CARBON	68K	5%	1/6W	
R606	1-247-863-00	CARBON	22K	5%	1/6W	
R607	1-247-875-00	CARBON	68K	5%	1/6W	
R608	1-247-865-00	CARBON	27K	5%	1/6W	
R609	1-247-865-00	CARBON	27K	5%	1/6W	
R610	1-247-870-00	CARBON	43K	5%	1/6W	
R611	1-247-870-00	CARBON	43K	5%	1/6W	
R612	1-247-855-00	CARBON	10K	5%	1/6W	
R613	1-247-845-00	CARBON	3.9K	5%	1/6W	
R621	1-247-849-00	CARBON	5.6K	5%	1/6W	
R622	1-247-849-00	CARBON	5.6K	5%	1/6W	
R651	1-247-851-00	CARBON	6.8K	5%	1/6W	
R652	1-247-771-00	CARBON	3.3	5%	1/6W	
R653	1-247-851-00	CARBON	6.8K	5%	1/6W	
R654	1-247-771-00	CARBON	3.3	5%	1/6W	
R655	1-247-827-00	CARBON	680	5%	1/6W	
R656	1-247-827-00	CARBON	680	5%	1/6W	
R706	1-247-867-00	CARBON	33K	5%	1/6W	
R707	1-247-873-00	CARBON	56K	5%	1/6W	
R708	1-247-867-00	CARBON	33K	5%	1/6W	
R709	1-247-875-00	CARBON	68K	5%	1/6W	
R710	1-247-869-00	CARBON	39K	5%	1/6W	
R711	1-247-903-00	CARBON	1M	5%	1/6W	
R712	1-247-879-00	CARBON	100K	5%	1/6W	
R801	1-247-903-00	CARBON	1M	5%	1/6W	
R802	1-247-891-00	CARBON	330K	5%	1/6W	
R803	1-249-421-11	CARBON	2.2K	5%	1/6W	
R804	1-247-855-00	CARBON	10K	5%	1/6W	
R805	1-247-853-00	CARBON	8.2K	5%	1/6W	
R904	1-247-855-00	CARBON	10K	5%	1/6W	
R905	1-247-871-00	CARBON	47K	5%	1/6W	

MODULATOR

Ref.No	Part No.	Description	Remark
RFU001	⚠1-464-446-11	MODULATOR, RF (RFU-739)	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV101	1-228-989-00	RES, ADJ, CARBON 470	
RV201	1-228-993-00	RES, ADJ, CARBON 4.7K	
RV203	1-228-998-00	RES, ADJ, CARBON 220K	
RV210	1-220-748-11	RES, ADJ, CARBON 10K	
RV801	1-228-995-00	RES, ADJ, CARBON 22K	

SWITCH

Ref.No	Part No.	Description	Remark
S801	1-554-174-00	SWITCH, KEY BOARD	
S802	1-554-174-00	SWITCH, KEY BOARD	
S803	1-553-716-00	SWITCH, SLIDE	
S806	1-553-716-00	SWITCH, SLIDE	
S807	1-554-174-00	SWITCH, KEY BOARD	
S808	1-553-716-00	SWITCH, SLIDE	
S809	1-553-716-00	SWITCH, SLIDE	

FILTER

Ref.No	Part No.	Description	Remark
SF201	1-404-479-00	SAWF	

TRANSFORMER

Ref.No	Part No.	Description	Remark
T201	1-404-541-11	COIL, FAS TRAP	
T202	1-404-467-00	COIL, AFT	
T203	1-404-505-00	COIL	
T204	1-404-467-00	COIL, VIFT	
T205	1-404-012-00	COIL	
T206	1-404-489-00	COIL, VCO	

TUNER

Ref.No	Part No.	Description	Remark
TU001⚠	1-463-603-22	TUNER ET (BTP-201D)	

****

*A-6721-233-A MP-7 BOARD, COMPLETE
****

CAPACITOR

Ref.No	Part No.	Description			Remark
C801	1-123-356-00	ELECT	10MF	20%	16V
C802	1-101-004-00	CERAMIC	0.01MF		50V
C803	1-130-487-00	MYLAR	0.022MF	5%	50V
C804	1-123-356-00	ELECT	10MF	20%	16V
C805	1-123-356-00	ELECT	10MF	20%	16V
C808	1-123-356-00	ELECT	10MF	20%	16V
C809	1-130-489-00	MYLAR	0.033MF	5%	50V
C810	1-123-356-00	ELECT	10MF	20%	16V
C811	1-130-021-00	FILM	0.0018MF	5%	50V
C812	1-123-380-00	ELECT	1MF	20%	50V
C813	1-123-356-00	ELECT	10MF	20%	16V
C814	1-136-165-00	MYLAR	0.1MF	10%	50V
C815	1-123-356-00	ELECT	10MF	20%	16V
C816	1-123-356-00	ELECT	10MF	20%	16V
C817	1-123-356-00	ELECT	10MF	20%	16V
C818	1-123-369-00	ELECT	4.7MF	20%	25V
C830	1-123-308-00	ELECT	220MF	20%	10V
C832	1-130-022-00	FILM	0.0022MF	10%	50V
C833	1-131-343-00	TANTALUM	0.22MF	10%	35V
C834	1-131-343-00	TANTALUM	0.22MF	10%	35V
C835	1-130-022-00	FILM	0.0022MF	10%	50V
C836	1-123-356-00	ELECT	10MF	20%	16V
C837	1-123-380-00	ELECT	1MF	20%	50V
C838	1-130-022-00	FILM	0.0022MF	10%	50V
C840	1-136-147-00	FILM	0.0033MF	10%	50V
C841	1-136-147-00	FILM	0.0033MF	10%	50V
C842	1-131-345-00	TANTALUM	0.47MF	10%	35V
C843	1-130-994-11	FILM	0.033MF	10%	50V
C844	1-136-147-00	FILM	0.0033MF	10%	50V
C845	1-136-147-00	FILM	0.0033MF	10%	50V
C846	1-131-371-00	TANTALUM	10MF	10%	16V
C847	1-123-306-00	ELECT	47MF	20%	10V
C848	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C849	1-123-380-00	ELECT	1MF	20%	50V
C850	1-123-380-00	ELECT	1MF	20%	50V
C851	1-123-330-00	ELECT	22MF	20%	16V
C852	1-123-380-00	ELECT	1MF	20%	50V
C853	1-123-356-00	ELECT	10MF	20%	16V
C854	1-123-306-00	ELECT	47MF	20%	10V
C855	1-123-382-00	ELECT	3.3MF	20%	50V
C856	1-102-125-00	CERAMIC	0.0047MF	10%	50V
C857	1-131-368-00	TANTALUM	3.3MF	10%	16V
C858	1-130-030-00	FILM	0.01MF	10%	50V
C870	1-130-497-00	MYLAR	0.15MF	10%	50V
C871	1-130-491-00	MYLAR	0.047MF	5%	50V
C872	1-130-475-00	MYLAR	0.0022MF	5%	50V
C873	1-130-471-00	MYLAR	0.001MF	5%	50V
C874	1-123-380-00	ELECT	1MF	20%	50V
C876	1-102-121-00	CERAMIC	0.0022MF	10%	50V
C877	1-123-380-00	ELECT	1MF	20%	50V

CONNECTOR

Ref.No	Part No.	Description	Remark
CN801	*1-560-896-00	PIN, CONNECTOR 8P	
CN802	*1-560-893-00	PIN, CONNECTOR 5P	

DIODE

Ref.No	Part No.	Description	Remark
D801	8-719-911-19	DIODE 1SS119	
D830	8-719-102-74	DIODE RD6.2EN2	

IC

Ref.No	Part No.	Description	Remark
IC801	8-752-011-20	IC CX20112	
IC830	8-759-400-88	IC AN6291	
IC831	8-759-145-58	IC UPC4558C	
IC870	8-759-602-48	IC M5201L	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q832	8-729-178-54	TRANSISTOR 2SC2785	
Q833	8-729-178-54	TRANSISTOR 2SC2785	
Q870	8-729-178-54	TRANSISTOR 2SC2785	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

MP-7 **PS-40** **PS-41** **PS-39**

Ref.No	Part No.	Description				Remark
Q871	8-729-178-54	TRANSISTOR 2SC2785				
		RESISTOR				
R802	1-215-469-00	METAL	100K	1%	1/6W	
R803	1-215-469-00	METAL	100K	1%	1/6W	
R804	1-247-879-00	CARBON	100K	5%	1/6W	
R805	1-247-831-00	CARBON	1K	5%	1/6W	
R806	1-247-831-00	CARBON	1K	5%	1/6W	
R807	1-247-831-00	CARBON	1K	5%	1/6W	
R808	1-247-855-00	CARBON	10K	5%	1/6W	
R809	1-247-825-00	CARBON	560	5%	1/6W	
R810	1-249-421-11	CARBON	2.2K	5%	1/6W	
R811	1-249-421-11	CARBON	2.2K	5%	1/6W	
R813	1-215-430-00	METAL	2.4K	1%	1/6W	
R814	1-247-853-00	CARBON	8.2K	5%	1/6W	
R815	1-247-843-00	CARBON	3.3K	5%	1/6W	
R817	1-247-859-00	CARBON	15K	5%	1/6W	
R818	1-247-859-00	CARBON	15K	5%	1/6W	
R819	1-247-903-00	CARBON	1M	5%	1/6W	
R832 ⚠	1-247-811-00	CARBON	150	5%	1/6W	
R834	1-247-867-00	CARBON	33K	5%	1/6W	
R835	1-247-843-00	CARBON	3.3K	5%	1/6W	
R836	1-247-885-00	CARBON	180K	5%	1/6W	
R837	1-247-844-00	CARBON	3.6K	5%	1/6W	
R838	1-247-885-00	CARBON	180K	5%	1/6W	
R839	1-215-421-00	METAL	1K	1%	1/6W	
R840	1-247-811-00	CARBON	150	5%	1/6W	
R841	1-247-885-00	CARBON	180K	5%	1/6W	
R842	1-247-848-00	CARBON	5.1K	5%	1/6W	
R843	1-247-885-00	CARBON	180K	5%	1/6W	
R844	1-247-844-00	CARBON	3.6K	5%	1/6W	
R845	1-247-893-00	CARBON	390K	5%	1/6W	
R846	1-247-863-00	CARBON	22K	5%	1/6W	
R847	1-247-865-00	CARBON	27K	5%	1/6W	
R848	1-247-843-00	CARBON	3.3K	5%	1/6W	
R849	1-247-843-00	CARBON	3.3K	5%	1/6W	
R850	1-247-847-00	CARBON	4.7K	5%	1/6W	
R851	1-247-847-00	CARBON	4.7K	5%	1/6W	
R852	1-247-847-00	CARBON	4.7K	5%	1/6W	
R853	1-247-847-00	CARBON	4.7K	5%	1/6W	
R854	1-247-811-00	CARBON	150	5%	1/6W	
R855	1-247-869-00	CARBON	39K	5%	1/6W	
R856	1-247-887-00	CARBON	220K	5%	1/6W	
R857	1-247-843-00	CARBON	3.3K	5%	1/6W	
R858	1-247-893-00	CARBON	390K	5%	1/6W	
R859	1-247-855-00	CARBON	10K	5%	1/6W	
R862	1-247-843-00	CARBON	3.3K	5%	1/6W	
R870	1-247-869-00	CARBON	39K	5%	1/6W	
R871	1-247-865-00	CARBON	27K	5%	1/6W	
R872	1-247-853-00	CARBON	8.2K	5%	1/6W	
R873	1-247-863-00	CARBON	22K	5%	1/6W	
R874	1-247-863-00	CARBON	22K	5%	1/6W	
R875	1-247-855-00	CARBON	10K	5%	1/6W	
R876	1-247-845-00	CARBON	3.9K	5%	1/6W	
R877	1-247-863-00	CARBON	22K	5%	1/6W	
R878	1-247-851-00	CARBON	6.8K	5%	1/6W	
R881	1-247-871-00	CARBON	47K	5%	1/6W	
		VARIABLE RESISTOR				
RV802	1-228-996-00	RES, ADJ, CARBON 47K				
RV803	1-228-997-00	RES, ADJ, CARBON 100K				
RV804	1-228-999-00	RES, ADJ, CARBON 470K				
RV805	1-228-994-00	RES, ADJ, CARBON 10K				
RV806	1-228-994-00	RES, ADJ, CARBON 10K				
RV830	1-228-991-00	RES, ADJ, CARBON 2.2K				
RV831	1-228-995-00	RES, ADJ, CARBON 22K				
RV832	1-228-994-00	RES, ADJ, CARBON 10K				

****

*1-612-789-11 PS-40 BOARD (US, CANADIAN MODEL)

*1-612-789-21 PS-40 BOARD (PX MODEL)

****

Ref.No	Part No.	Description				Remark
	1-533-162-00	HOLDER, FUSE				
		CAPACITOR				
C017 ⚠	1-125-298-00	ELECT(BLOCK)	10000MF	20%	25V	
C018	1-161-024-00	CERAMIC	0.082MF	10%	25V	
		DIODE				
D007 ⚠	8-719-907-48	DIODE ERC01-02FL15				
D008 ⚠	8-719-907-48	DIODE ERC01-02FL15				
D009 ⚠	8-719-907-48	DIODE ERC01-02FL15				
D010 ⚠	8-719-907-48	DIODE ERC01-02FL15				
D013	8-719-100-97	DIODE RD30E-B1				
		FUSE				
F002	1-532-557-00	FUSE, GLASS TUBE 3.15A 125V				

****

*1-612-790-11 PS-41 BOARD (US, CANADIAN MODEL)

*1-612-790-21 PS-41 BOARD (PX MODEL)

****

Ref.No	Part No.	Description	Remark
		IC	
IC001 ⚠	8-749-954-41	IC STK5441	

****

*A-6723-268-A PS-39 BOARD, COMPLETE (US, CANADIAN MODEL)

*A-6723-279-A PS-39 BOARD, COMPLETE (PX MODEL)

****

Ref.No	Part No.	Description				Remark
		CAPACITOR				
C001 ⚠	1-130-680-00	FILM	0.1MF	20%	125V	
C003 ⚠	1-161-742-00	CERAMIC	0.0022MF	20%	400V	
			(US, CANADIAN MODEL)			
C004 ⚠	1-123-326-00	ELECT	3300MF	20%	15V	
C005 ⚠	1-123-372-00	ELECT	33MF	20%	63V	
C006 ⚠	1-123-372-00	ELECT	33MF	20%	63V	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
C007	⚠.1-123-348-00	ELECT	470MF	20%	35V	
C008	1-123-332-00	ELECT	47MF	20%	25V	
C009	1-123-381-00	ELECT	2.2MF	20%	50V	
C010	1-123-333-00	ELECT	100MF	20%	16V	
C011	1-123-332-00	ELECT	47MF	20%	16V	
C012	1-123-307-00	ELECT	100MF	20%	10V	
C014	1-123-318-00	ELECT	33MF	20%	10V	
C015	1-123-380-00	ELECT	1MF	20%	50V	
C016	1-124-621-11	ELECT	3300MF	20%	6.3V	
C019	1-161-024-00	CERAMIC	0.082MF	10%	25V	
C021	1-102-129-00	CERAMIC	0.01MF	10%	50V	
C022	1-102-129-00	CERAMIC	0.01MF	10%	50V	
C023	1-106-196-00	MYLAR	0.01MF	10%	100V	
		CONNECTOR				
CN001	*1-560-890-00	PIN, CONNECTOR 2P				
CN002	*1-560-890-00	PIN, CONNECTOR 2P				
CN003	*1-560-893-00	PIN, CONNECTOR 5P				
CN004	*1-560-895-00	PIN, CONNECTOR 7P				
CN005	*1-560-897-00	PIN, CONNECTOR 9P				
		DIODE				
D001	⚠.8-719-200-02	DIODE 10E-2				
D002	⚠.8-719-200-02	DIODE 10E-2				
D003	⚠.8-719-200-02	DIODE 10E-2				
D004	⚠.8-719-200-02	DIODE 10E-2				
D005	8-719-101-14	DIODE RD36EB1				
D006	⚠.8-719-911-19	DIODE 1SS119				
D014	⚠.8-719-100-38	DIODE RD6.2EB2				
D015	⚠.8-719-200-02	DIODE 10E-2				
		FUSE				
F001	⚠.1-532-593-00	FUSE, GLASS TUBE 1.6A 125V				
		TRANSISTOR				
Q001	8-729-103-43	TRANSISTOR 2SB734				
		RESISTOR				
R001	⚠.1-202-723-00	SOLID	2.2M	10%	1/2W	
R002	⚠.1-212-958-00	FUSIBLE	10	5%	1/2W	F
R003	⚠.1-212-934-00	FUSIBLE	1	5%	1/2W	F
R004	1-247-859-00	CARBON	15K	5%	1/6W	
R005	⚠.1-212-958-00	FUSIBLE	10	5%	1/2W	F
R006	1-247-821-00	CARBON	390	5%	1/6W	
R007	1-247-821-00	CARBON	390	5%	1/6W	
R011	⚠.1-247-807-00	CARBON	100	5%	1/6W	

****

Ref.No	Part No.	Description				Remark
	*1-612-791-11	PS-42 BOARD ************				
		SWITCH				
S002	1-554-377-00	SWITCH, SLIDE				

****

Ref.No	Part No.	Description				Remark
	*1-612-509-11	MI-4 BOARD ***********				
		DIODE				
PH001	8-719-913-41	DIODE SPI201-22				
		PLUNGER SOLENOID				
PM902	⚠.1-454-371-11	SOLENOID, PLUNGER (BRAKE)				
		RESISTOR				
R001	1-247-855-00	CARBON	10K	5%	1/6W	
R002	1-247-844-00	CARBON	3.6K	5%	1/6W	
R003	1-247-826-00	CARBON	620	5%	1/6W	
R004	1-247-867-00	CARBON	33K	5%	1/6W	
R005	1-247-859-00	CARBON	15K	5%	1/6W	
		SWITCH				
S901	1-554-839-11	SWITCH, LEAF (2 GANG)				

****

Ref.No	Part No.	Description				Remark
	*A-6725-436-A	TM-81 BOARD, COMPLETE **********************				
		CAPACITOR				
C101	1-123-611-00	ELECT	1MF	20%	50V	
C102	1-123-611-00	ELECT	1MF	20%	50V	
C103	1-161-326-00	CERAMIC	0.0022MF	30%	50V	
C104	1-123-617-00	ELECT	10MF	20%	16V	
C105	1-161-059-00	CERAMIC	0.047MF	20%	25V	
C106	1-161-279-00	CERAMIC	10PF	5%	50V	
C107	1-161-279-00	CERAMIC	10PF	5%	50V	
C109	1-123-620-00	ELECT	10MF	20%	25V	
C201	1-123-645-00	ELECT	33MF	20%	10V	
C202	1-161-059-00	CERAMIC	0.047MF	20%	25V	
C203	1-161-313-00	CERAMIC	150PF	10%	50V	
C204	1-161-313-00	CERAMIC	150PF	10%	50V	
		CONNECTOR				
CN104	*1-564-015-00	PIN, CONNECTOR 5P				
		COMPOSITION CIRCUIT BLOCK				
CP101	1-232-882-11	COMPOSITION CIRCUIT BLOCK				
CP102	1-232-881-11	COMPOSITION CIRCUIT BLOCK				
CP103	1-232-880-11	COMPOSITION CIRCUIT BLOCK				

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

TM-81

Ref.No	Part No.	Description				Remark
CP104	1-232-879-11	COMPOSITION CIRCUIT BLOCK				
CP105	1-232-881-11	COMPOSITION CIRCUIT BLOCK				
		DIODE				
D101	8-719-200-02	DIODE 10E-2				
D102	8-719-911-19	DIODE 1SS119				
D103	8-719-911-19	DIODE 1SS119				
D104	8-719-911-19	DIODE 1SS119				
D105	8-719-911-19	DIODE 1SS119				
D107	8-719-911-19	DIODE 1SS119				
D110	8-719-101-04	DIODE RD33EB2				
D111	8-719-100-30	DIODE RD5.1EB2				
D304	8-719-911-19	DIODE 1SS119				
D305	8-719-911-19	DIODE 1SS119				
		IC				
IC101	8-752-800-10	IC CXP5016-008S				
IC201	8-759-602-50	IC M50761-639P				
		INDICATOR TUBE				
ND101	1-519-359-11	INDICATOR TUBE FLUORESCENT				
		TRANSISTOR				
Q101	8-729-245-83	TRANSISTOR 2SC2458				
Q102	8-729-900-89	TRANSISTOR DTC144ES				
Q103	8-729-245-83	TRANSISTOR 2SC2458				
Q104	8-729-245-83	TRANSISTOR 2SC2458				
Q105	8-729-245-83	TRANSISTOR 2SC2458				
Q301	⚠8-729-902-11	TRANSISTOR 2SC2021				
Q302	8-729-900-38	TRANSISTOR DTA114EF				
		RESISTOR				
R101	1-247-831-00	CARBON	1K	5%	1/6W	
R102	1-247-831-00	CARBON	1K	5%	1/6W	
R103	1-247-831-00	CARBON	1K	5%	1/6W	
R104	1-247-831-00	CARBON	1K	5%	1/6W	
R105	1-247-831-00	CARBON	1K	5%	1/6W	
R106	1-247-807-00	CARBON	100	5%	1/6W	
R107	1-247-831-00	CARBON	1K	5%	1/6W	
R108	1-247-831-00	CARBON	1K	5%	1/6W	
R109	1-247-831-00	CARBON	1K	5%	1/6W	
R110	1-247-831-00	CARBON	1K	5%	1/6W	
R111	1-247-867-00	CARBON	33K	5%	1/6W	
R112	1-247-831-00	CARBON	1K	5%	1/6W	
R113	1-247-831-00	CARBON	1K	5%	1/6W	
R114	1-247-871-00	CARBON	47K	5%	1/6W	
R115	1-247-879-00	CARBON	100K	5%	1/6W	
R116	1-247-855-00	CARBON	10K	5%	1/6W	
R117	1-247-871-00	CARBON	47K	5%	1/6W	
R118	1-247-855-00	CARBON	10K	5%	1/6W	
R119	1-247-831-00	CARBON	1K	5%	1/6W	
R120	1-247-807-00	CARBON	100	5%	1/6W	

Ref.No	Part No.	Description				Remark
R121	1-247-867-00	CARBON	33K	5%	1/6W	
R201	1-247-903-00	CARBON	1M	5%	1/6W	
R207	1-247-873-00	CARBON	56K	5%	1/6W	
R208	1-247-863-00	CARBON	22K	5%	1/6W	
R301	1-247-835-00	CARBON	1.5K	5%	1/6W	
R302	1-247-855-00	CARBON	10K	5%	1/6W	
R303	1-247-873-00	CARBON	56K	5%	1/6W	
R304	1-247-827-00	CARBON	680	5%	1/6W	
R400	1-247-815-00	CARBON	220	5%	1/6W	
R401	1-247-815-00	CARBON	220	5%	1/6W	
R402	1-247-855-00	CARBON	10K	5%	1/6W	
R403	1-247-855-00	CARBON	10K	5%	1/6W	
R501	1-247-855-00	CARBON	10K	5%	1/6W	
R502	1-247-855-00	CARBON	10K	5%	1/6W	
R503	1-247-855-00	CARBON	10K	5%	1/6W	
R504	1-247-855-00	CARBON	10K	5%	1/6W	
		VARIABLE RESISTOR				
RV301	1-230-426-11	RES, VAR, SLIDE 10K/10K				
		SWITCH				
S101	1-554-174-00	SWITCH, KEY BOARD				
S102	1-554-174-00	SWITCH, KEY BOARD				
S103	1-554-174-00	SWITCH, KEY BOARD				
S104	1-554-174-00	SWITCH, KEY BOARD				
S105	1-554-174-00	SWITCH, KEY BOARD				
S107	1-554-174-00	SWITCH, KEY BOARD				
S108	1-554-174-00	SWITCH, KEY BOARD				
S109	1-554-174-00	SWITCH, KEY BOARD				
S110	1-554-174-00	SWITCH, KEY BOARD				
S111	1-554-174-00	SWITCH, KEY BOARD				
S112	1-554-174-00	SWITCH, KEY BOARD				
S201	1-554-174-00	SWITCH, KEY BOARD				
S202	1-554-174-00	SWITCH, KEY BOARD				
S203	1-554-174-00	SWITCH, KEY BOARD				
S204	1-554-174-00	SWITCH, KEY BOARD				
S205	1-554-174-00	SWITCH, KEY BOARD				
S206	1-554-174-00	SWITCH, KEY BOARD				
S207	1-554-174-00	SWITCH, KEY BOARD				
S208	1-554-174-00	SWITCH, KEY BOARD				
S209	1-554-174-00	SWITCH, KEY BOARD				
S210	1-554-174-00	SWITCH, KEY BOARD				
S212	1-554-174-00	SWITCH, KEY BOARD				
S301	1-553-716-00	SWITCH, SLIDE				
S303	1-553-754-00	SWITCH, SLIDE				
		CRYSTAL				
X101	1-567-121-00	VIBRATOR, CRYSTAL				
X201	1-527-532-31	OSCILLATOR, CERAMIC				

****

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
	*1-605-071-00	LM-16 BOARD ************	

****

MISCELLANEOUS
****

Ref.No	Part No.	Description	Remark
	*A-4910-021-B	R STATOR (REEL MOTOR) BOARD, COMPLETE	
	A-6761-099-A	ACE ASSY	
	1-520-481-11	METER, LEVEL	
	⚠1-526-882-00	OUTLET, AC	
	⚠1-557-480-11	CORD, POWER	
	8-825-508-10	HEAD, FE	
	8-838-071-01	CAPSTAN MOTOR, DC (BHF-1909C)	
L901	1-464-503-31	S COIL SENSOR (SUPPLY)	
L902	1-464-491-31	T COIL SENSOR (TAKE UP)	
PM901	⚠1-454-349-51	SOLENOID, PLUNGER (PINCH)	
S903	1-554-840-11	SWITCH, LEAF (LOAD END)	
S904	1-554-840-11	SWITCH, LEAF (CASSETTE ON)	
S991	⚠1-554-842-11	SWITCH, ANTENNA CHANGE	
T901	⚠1-448-153-11	TRANSFORMER, POWER (US, CANADIAN MODEL)	
	⚠1-448-186-11	TRANSFORMER, POWER (PX MODEL)	
	⚠1-554-933-11	SELECTOR, VOLTAGE (PX MODEL)	

****

ACCESSORIES AND PACKING MATERIALS
****

Part No.	Description	Remark
A-6765-773-A	COMMANDER ASSY	
1-513-379-00	CONVERTER (EAC-25)	
1-551-644-41	CORD, CONNECTION	
1-551-734-11	CORD, CONNECTION (RK-74A)	
2-383-127-11	BUTTON, SLIDE	
2-387-101-11	BUTTON, RECORDING	
2-387-113-01	PLATE, COLOR	
2-387-118-11	BUTTON, SLIDE	
2-387-132-01	RUBBER, CONTACT	
2-387-133-01	PLATE, FROSTED	
2-387-134-01	COVER, BATTERY	
*3-677-503-00	SHEET, PROTECTION	
*3-684-259-01	CASE, ACCESSORY (CANADIAN,PX MODEL)	
*3-685-753-01	LID, CASE ACCESSORY (CANADIAN,PX MODEL)	
*3-693-453-01	CUSHION (UPPER)	
*3-693-454-01	CUSHION (LOWER)	
3-760-588-21	MANUAL, INSTRUCTION	
3-760-588-31	MANUAL, INSTRUCTION (CANADIAN MODEL)	
3-795-581-21	INSTRUCTION (US MODEL)	

****

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

SECTION 7
ADJUSTMENTS

TABLE OF CONTENTS

Section *Title* *Page*

1. PREPATATION FOR MECHANICAL SECTION CHECK, ADJUSTMENT AND REPLACEMENT

1-1. Disassembly of Cabinet ... 161
1-2. Removal of the TU-76 Board and VI-11 Board ... 162
1-3. Removal of the AU-8 Board and MP-7 Board ... 162
1-4. Removal of the SS-32 Board ... 163
1-5. Removal of the TM-81 Board ... 163
1-6. Removal of the FU-38 Board ... 164
1-7. Removal of the RP-28 Board ... 164
1-8. Removal of the Power Block ... 165
1-9. Removal of the FL Cassette Compartment Assembly ... 165
1-10. Removal of the Reel Base Block Assembly ... 166
1-11. Operation of the Unit with the FL Cassette Compartment Removed ... 167
  1-11-1. How to Put the Unit into Threading Completed Mode when the FL Cassette Compartment is Removed ... 167
  1-11-2. Playback Without Cassette Installed ... 167
  1-11-3. How to Put in Recording Mode Without Cassette Installed ... 167
1-12. How to Load, Thread, Unload and Unthread with the Power OFF ... 168
  1-12-1. Manual Loading and Unloading ... 168
  1-12-2. Manual Threading and Unthreading ... 168
1-13. Tools and Fixtures Required for Servicing ... 169

2. PERIODIC CHECK ITEMS

2-1. Post-Repair Maintenance ... 170
  2-1-1. Cleaning of Rotating Head Disk Assembly ... 170
  2-1-2. Cleaning of the Tape Movement System ... 170
  2-1-3. Cleaning the Drive System ... 170
2-2. Periodic Check Items ... 171

3. CHECK, ADJUSTMENT AND REPLACEMENT PROCEDURES

3-1. State of wear of Video Heads Check ... 172
3-2. Replacement of Rotating Head Disk Assembly ... 173
  3-2-1. Removal of the Rotating Head Disk Assembly ... 173
  3-2-2. Mounting of the Rotating Head Disk Assembly ... 173
3-3. Video Head Dihedral Check and Adjustment ... 174
3-4. Replacement and Adjustment of the Drum Assembly ... 175
  3-4-1. Replacement of the Drum Assembly ... 175
  3-4-2. Adjustment of the Motor Gap when Replacing the Drum Assembly ... 176
3-5. Replacement of the Capstan Motor ... 176
  3-5-1. Removal of the Capstan Motor ... 176
3-6. Removal of the S Coil Sensor ... 177
3-7. Removal of the FL Cassette Compartment Assembly ... 177
3-8. Adjustment of the FL Casette Compartment ... 178
  3-8-1. Adjustment of the Position of the Right Gear of the FL Cassette Compartment Assembly ... 178
  3-8-2. Cassette ON Switch Operation Check and Adjustment ... 178
  3-8-3. Checking and Adjustment of the Cassette Door Assembly ... 179
  3-8-4. Mounting the FL Cassette Compartment Assembly ... 179
3-9. Removal of the No.2 and No.3 Guides ... 180
  3-9-1. Removal of the No.2 Guide ... 180
  3-9-2. Removal of the No.3 Guide ... 180
3-10. Replacement and Adjustment of the S Threading Ring ... 181
  3-10-1. Preparation to Remove the S Threading Ring Removal of the AC Assembly, FE Head and Threading Motor ... 181
  3-10-2. Removal of the S Threading Ring ... 183
  3-10-3. S Threading Ring Mounting and Position Adjustment ... 184
3-11. Pinch Snap-fit Limiter Gap Check and Adjustment ... 185
3-12. Threading End Switch and T Coil Sensor ... 186
  3-12-1. Threading End Switch (TE Switch) Position Check and Adjustment ... 186
  3-12-2. T Coil Sensor Mounting and Operation Check ... 187
3-13. Removal and Adjustment of the reel Base Assembly ... 188
  3-13-1. Removal of the Reel Base Assembly ... 188
  3-13-2. Adjustment of the Position of the Tention Regulating Lever ... 188
3-14. Adjustment of the Forward and Back Tension ... 189
3-15. Adjustment of the Forward Torque ... 189

Section *Title* *Page*

4. TAPE PATH ADJUSTMENT

4-1. Tracking Adjustment 190
  4-1-1. Preparation for Adjustment 191
  4-1-2. Entrance Side Adjustment 191
  4-1-3. Exit Side Adjustment 193
4-2. Adjustments after Replacement of the AC Assembly 194
  4-2-1. EXT Side Tracking Adjustment 194
  4-2-2. CTL Head (AC Assembly) Position Adjustment 196
  4-2-3. Audio Head (AC Assembly) Azimuth Adjustment 197
  4-2-4. Audio Head (AC Assembly) Height Adjustment 197
4-3. How to Inspect the Tape Traveling when Adjusting the Tape Path 198

5. ELECTRICAL ALIGNMENT

5-1. Power Supply Check (PS-39 Board) 201
5-2. System Control Check (SS-32 Board) 201
  5-2-1. Clock Frequency Check 201
5-3. Servo System Alignment 201
  5-3-1. Reel Motor Control System Alignment 201
  5-3-2. Drum Servo System Alignment 201
  5-3-3. Capstan Servo System Alignment 203
5-4. Video System Alignment 204
  5-4-1. Playback System Alignment 204
  5-4-2. Record System Alignment 205
  5-4-3. Slow Motion Playback System Alignment 208
5-5. Audio System Adjustment (AU-8 Board) 208
  5-5-1. AC Head Adjustment 208
  5-5-2. Playback Frequency Characteristic Check 208
  5-5-3. Playback Output Level Adjustment 208
  5-5-4. E-E Output Level Check 208
  5-5-5. Bias Oscillator Frequency and Bias Tape Check 209
  5-5-6. Record Bias Adjustment 209
  5-5-7. Overall Frequency Characteristic Check 209
  5-5-8. Overall S/N Check 210
  5-5-9. Overall S/N Check (Beta Hi-Fi Mode) 210
  5-5-10. Overall Distortion Check 210
  5-5-11. Overall Distortion Check (Beta Hi-Fi Mode) 210
  5-5-12. Beta Hi-Fi Recording Carrier Wave Level Check 210
  5-5-13. Dynamic Emphasis Decoder Gain and Playback L-CH (R-CH) Check 210
  5-5-14. Beta Hi-Fi Deviation Check 211
5-6. Tuner System Adjustment 211
  1. AFT Adjutment 211
  2. RF AGC Adjustment 211
  3. Audio Carrier Lock SIF Adjustment (TU-76 board) 211
  4. Multiplex Decorder Adjustment (MP-7 board) 211
  5. Noise Reduction Adjustment (MP-7 board) 211
  6. Separation Check 212
  7. Video Modulation Adjustment (TU-76 board) 212

1. PREPARATION FOR MECHANICAL SECTION CHECK, ADJUSTMENT AND REPLACEMENT

1-1. DISASSEMBLY OF CABINET

❶ Remove the four case set screws.
❷ Remove the upper case in the direction indicated by the arrow Ⓐ.
❸ Remove the ten screws (BVTP3×8), then remove the lower case.
❹ Remove the three screws (BVTP3×8).
❺ Remove the front panel in the direction indicated by the arrow Ⓑ.

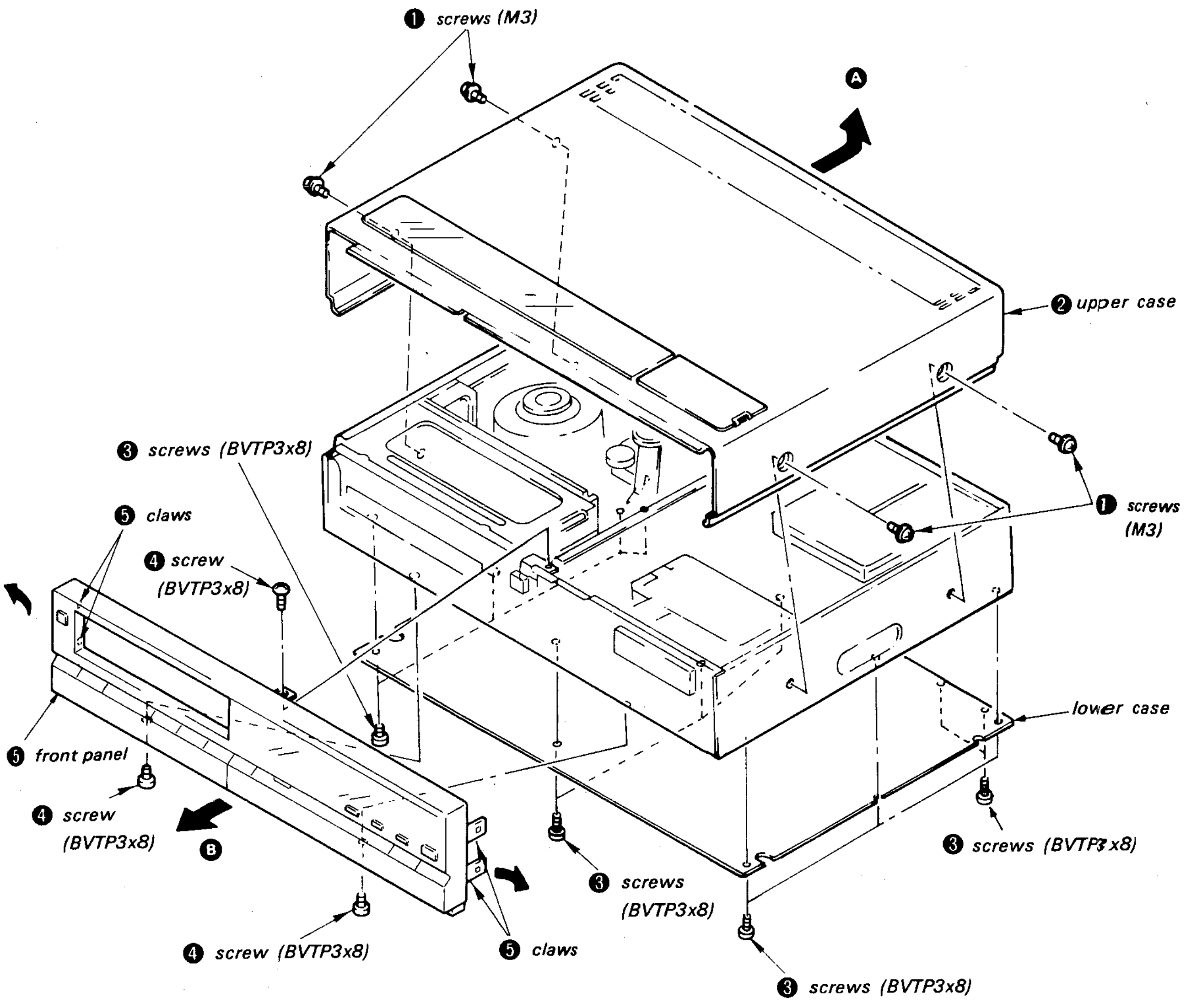

❶ screws (M3)
Ⓐ
❷ upper case
❶ screws (M3)
❸ screws (BVTP3x8)
❺ claws
❹ screw (BVTP3x8)
❺ front panel
❹ screw (BVTP3x8)
Ⓑ
lower case
❸ screws (BVTP3x8)
❸ screws (BVTP3x8)
❹ screw (BVTP3x8)
❺ claws
❸ screws (BVTP3x8)

Fig. 1-1. Disassembly of Cabinet

1-2. REMOVAL OF THE TU-76 BOARD AND VI-11 BOARD

1. Pull out the two plugs.
2. Remove the two screws (BVTP3×8).
3. Remove the TU-76 board.
4. Remove the two screws (BVTP3×8).
5. Remove the VI-11 board.

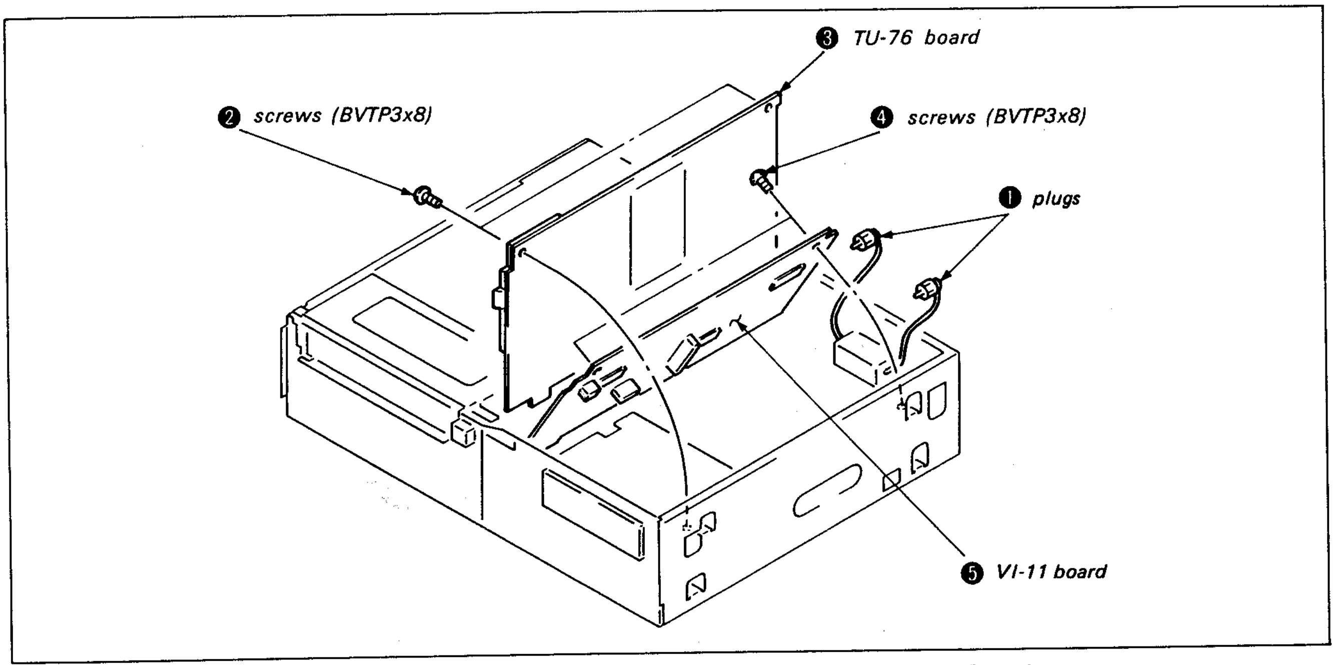

❸ TU-76 board
❷ screws (BVTP3x8)
❹ screws (BVTP3x8)
❶ plugs
❺ VI-11 board

Fig. 1-2. Removal of the TU-76 Board and VI-11 Board

1-3. REMOVAL OF THE AU-8 BOARD AND MP-7 BOARD

1. Remove the screw (BVTP3×8).
2. Remove the rear panel.
3. Remove the two screws (BVTP3×8).
4. Remove the AU-8 board.
5. Remove the one screw (BVTP3×8).
6. Remove the MP-7 board.

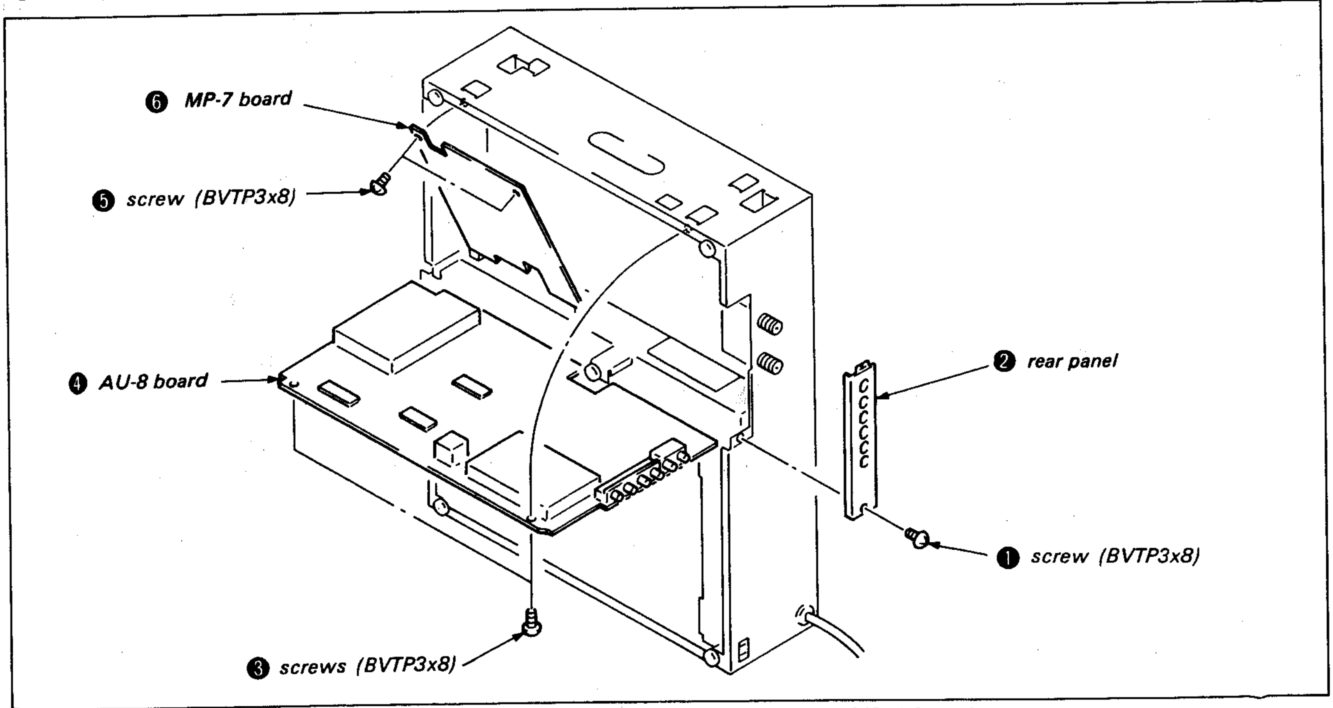

❻ MP-7 board
❺ screw (BVTP3x8)
❹ AU-8 board
❷ rear panel
❶ screw (BVTP3x8)
❸ screws (BVTP3x8)

Fig. 1-3. Removal of the AU-8 Board and MP-7 Board

1-4. REMOVAL OF THE SS-32 BOARD

❶ Remove the two screws (BVTP3×8).
❷ Remove the SS-32 board.

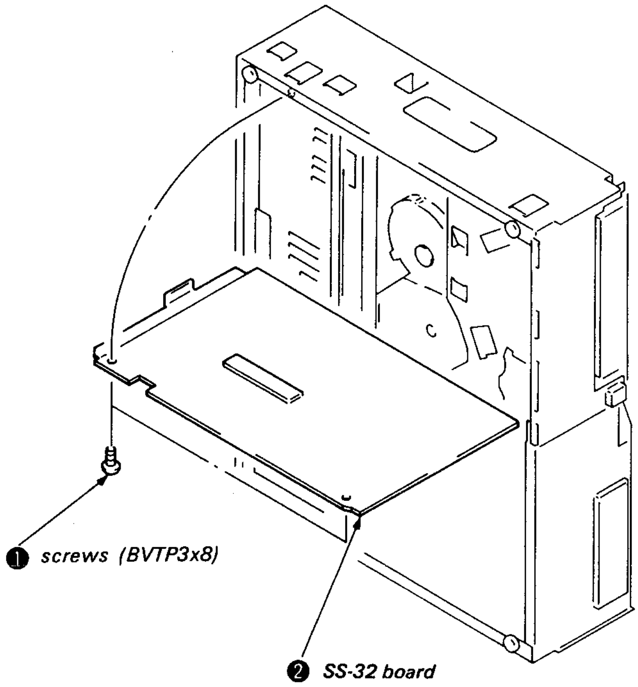

❶ screws (BVTP3x8)
❷ SS-32 board

Fig. 1-4. Removal of the SS-32 Board

1-5. REMOVAL OF THE TM-81 BOARD

❶ Pull out the connector CN104.
❷ Pull out the seven connectors.
❸ Remove the one screw (BVTP3×8).
❹ Remove the TM-81 board.

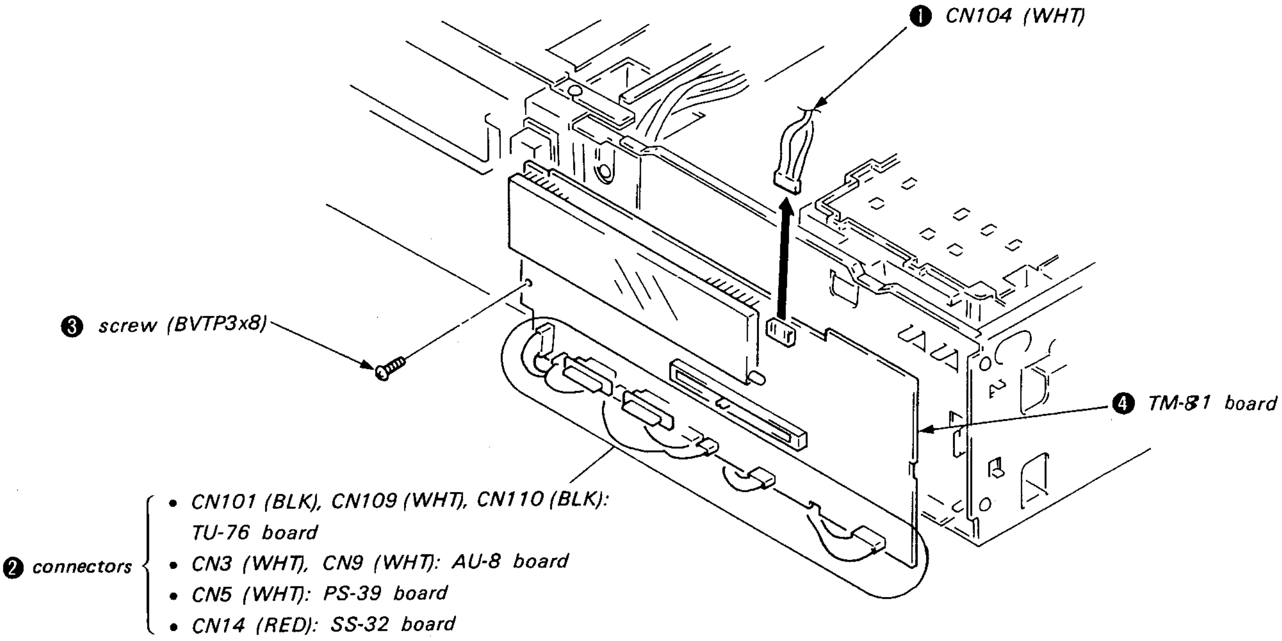
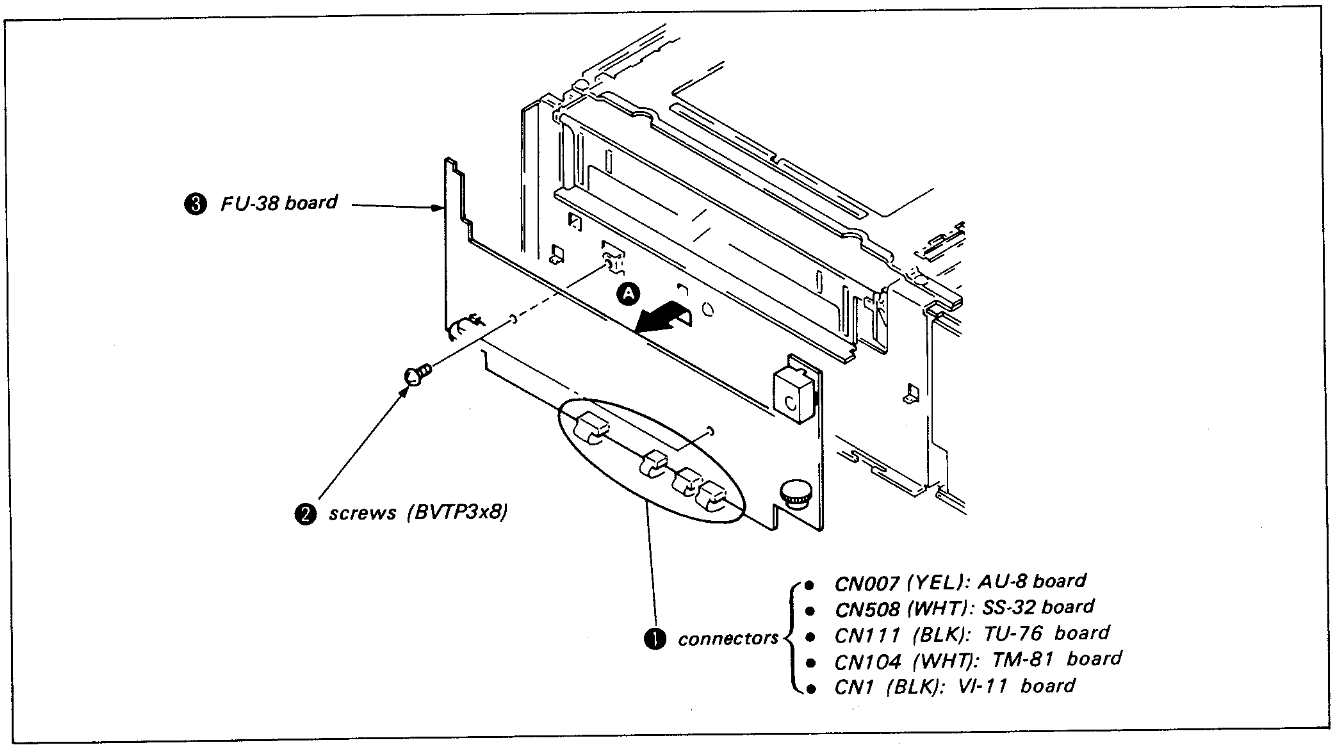

❶ CN104 (WHT)
❸ screw (BVTP3x8)
❹ TM-81 board
❷ connectors
• CN101 (BLK), CN109 (WHT), CN110 (BLK): TU-76 board
• CN3 (WHT), CN9 (WHT): AU-8 board
• CN5 (WHT): PS-39 board
• CN14 (RED): SS-32 board

Fig. 1-5. Removal of the TM-81 Board

1-6. REMOVAL OF THE FU-38 BOARD

❶ Pull out the five connectors.
❷ Remove the two screws (BVTP3×8).
❸ Remove the FU-38 board in the direction indicated by the arrow Ⓐ.

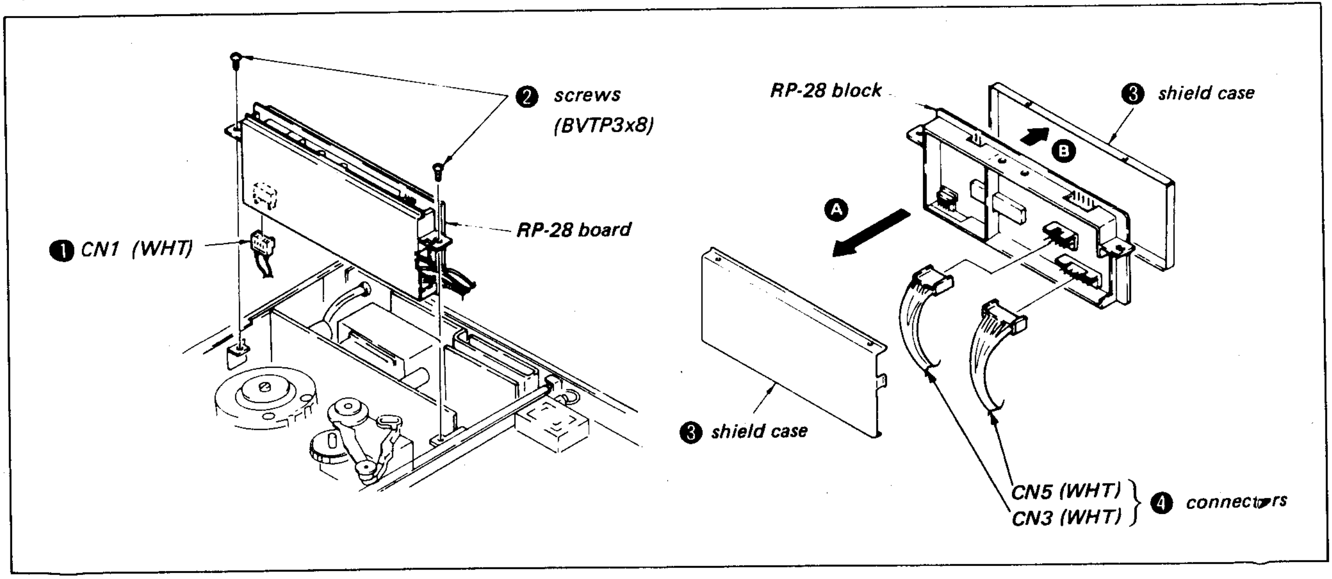


❸ FU-38 board
Ⓐ
❷ screws (BVTP3x8)
❶ connectors
• CN007 (YEL): AU-8 board
• CN508 (WHT): SS-32 board
• CN111 (BLK): TU-76 board
• CN104 (WHT): TM-81 board
• CN1 (BLK): VI-11 board

Fig. 1-6. Removal of the FU-38 Board

1-7. REMOVAL OF THE RP-28 BOARD

❶ Pull out the connector CN1.
❷ Remove the two screws (BVTP3×8).
❸ Remove the two shield cases in the direction indicated by the arrows Ⓐ and Ⓑ.
❹ Pull out the two connectors (CN3, CN5).



❷ screws (BVTP3x8)
RP-28 block
❸ shield case
❶ CN1 (WHT)
RP-28 board
Ⓑ
Ⓐ
❸ shield case
CN5 (WHT)
CN3 (WHT)
❹ connectors

Fig. 1-7. Removal of the RP-28 Board

1-8. REMOVAL OF THE POWER BLOCK

❶ Remove the five connectors (CN1-CN5).
❷ Remove the six screws (BVTP3×8).
❸ Remove the POWER block in the direction indicated by the arrow Ⓐ.

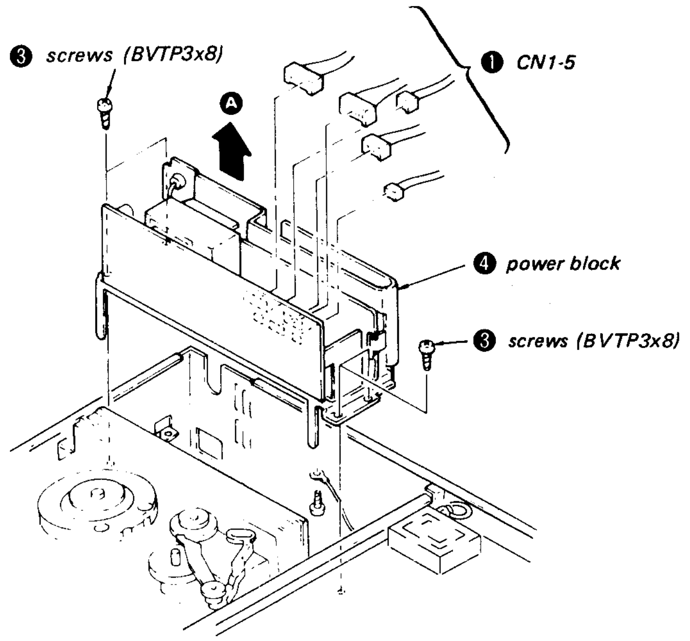

❸ screws (BVTP3x8)
Ⓐ
❶ CN1-5
❹ power block
❸ screws (BVTP3x8)

Fig. 1-8. Removal of the Power Block

1-9. REMOVAL OF THE FL CASSETTE COMPARTMENT ASSEMBLY

❶ Remove the four screws (BVTP3×8).
❷ Remove the internal gear flange.
❸ Remove the timing belt.
❹ Pull out the connector (CN12) from the SS-32 board.
❺ FL cassette compartment assembly in the direction indicated by the arrow Ⓐ.

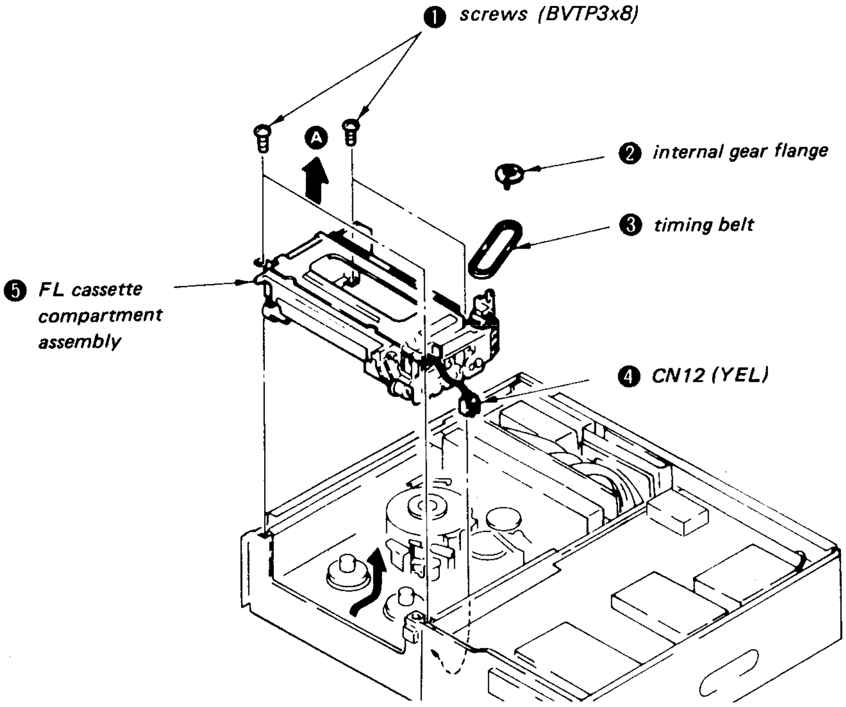

❶ screws (BVTP3x8)
Ⓐ
❷ internal gear flange
❸ timing belt
❺ FL cassette compartment assembly
❹ CN12 (YEL)

Fig. 1-9. Removal of the FL Cassette Compartment Assembly

1-10. REMOVAL OF THE REEL BASE BLOCK ASSEMBLY

❶ Remove the four screws (BVTP3×8).

❷ Remove the protector.

❸ Remove the reel base block assembly in the direction indicated by the arrow Ⓐ.

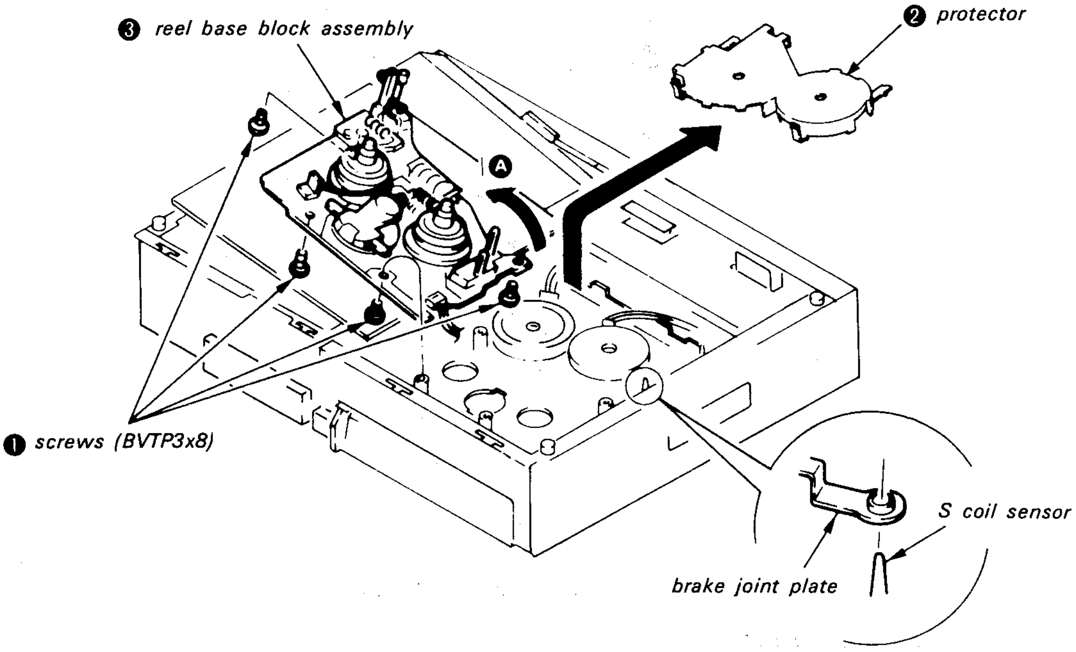

❸ reel base block assembly
❷ protector
Ⓐ
❶ screws (BVTP3x8)
S coil sensor
brake joint plate

Fig. 1-10. Removal of the Reel Base Block Assembly

1-11. OPERATION OF THE UNIT WITH THE FL CASSETTE COMPARTMENT REMOVED

1-11-1. How to Put the Unit into Threading Completed Mode when the FL Cassette Compartment is Removed

❶ Connect ordinary screwdriver to short the leaf switch (cassette-on switch).

Note:

Be careful that the ordinary screwdriver do not touch any other parts (use tape or other insulation).

❷ Press the cassette-down switch and leave it pressed in. When the power button is turned ON, threading starts.

* Refer to section 1-9 for instructions on how to remove the FL cassette compartment.

[How to EJECT in this condition]

- Press the EJECT button. When unthreading is completed and the internal gear starts to turn, turn the power OFF.

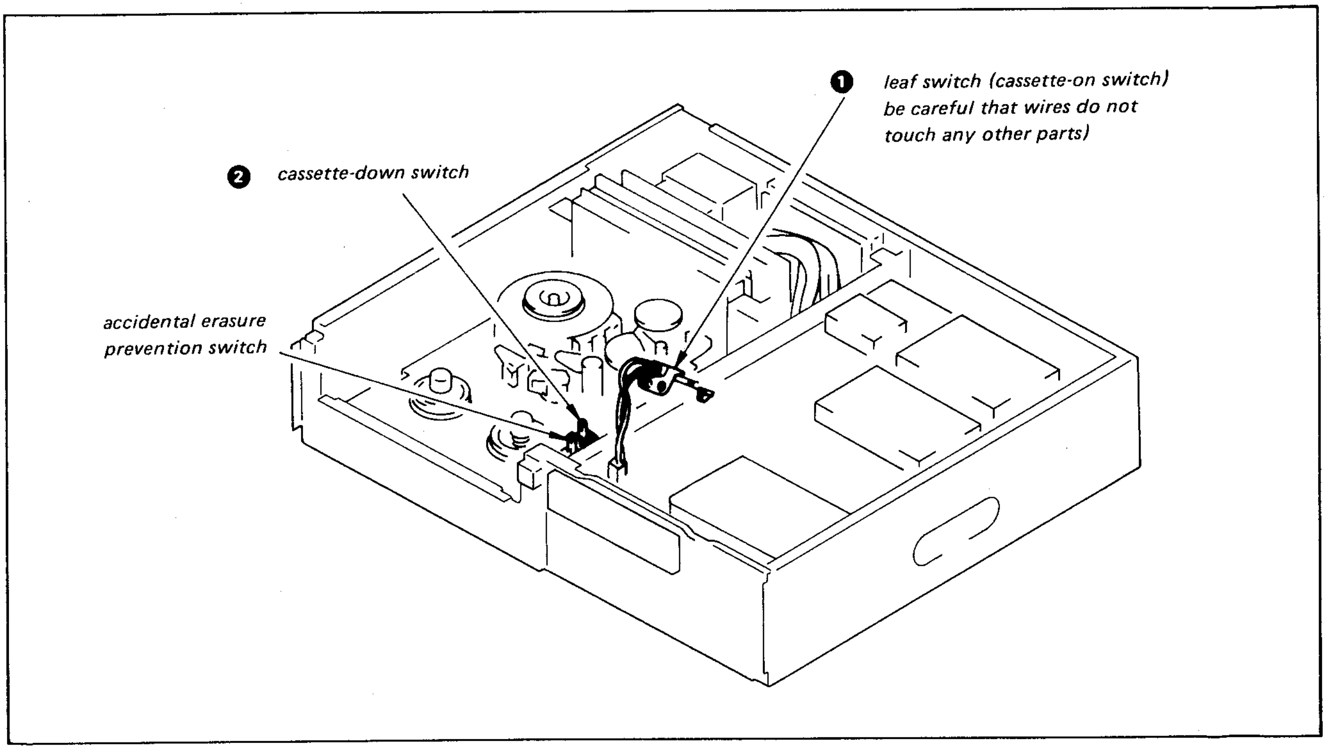

❶ leaf switch (cassette-on switch)
be careful that wires do not
touch any other parts)
❷ cassette-down switch
accidental erasure
prevention switch

Fig. 1-11. How to thread the tape when the FL cassette compartment has been removed

1-11-2. Playback Without Cassette Installed

Complete threading by the procedure described in 1-11-1, then press the playback button.

1-11-3. How to Put in Recording Mode Without Cassette Installed

1. Thread by the procedure in 1-11-1, then ress the accidental erasure prevention switch shown in Fig. 1-12.
2. With the accidental erasure prevention switch pressed down, press the recording button.

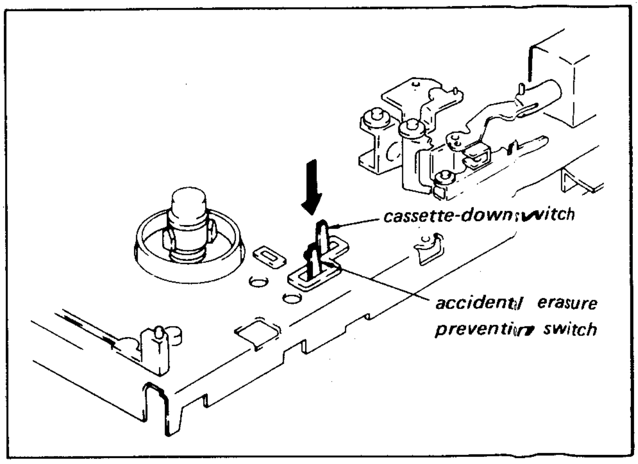

cassette-down switch
accidental erasure
prevention switch

Fig. 1-12. How to put the recorder in recording mode with the FL cassette compartment removed

1-12. HOW TO LOAD, THREAD, UNLOAD AND UNTHREAD WITH THE POWER OFF

1-12-1. Manual Loading and Unloading

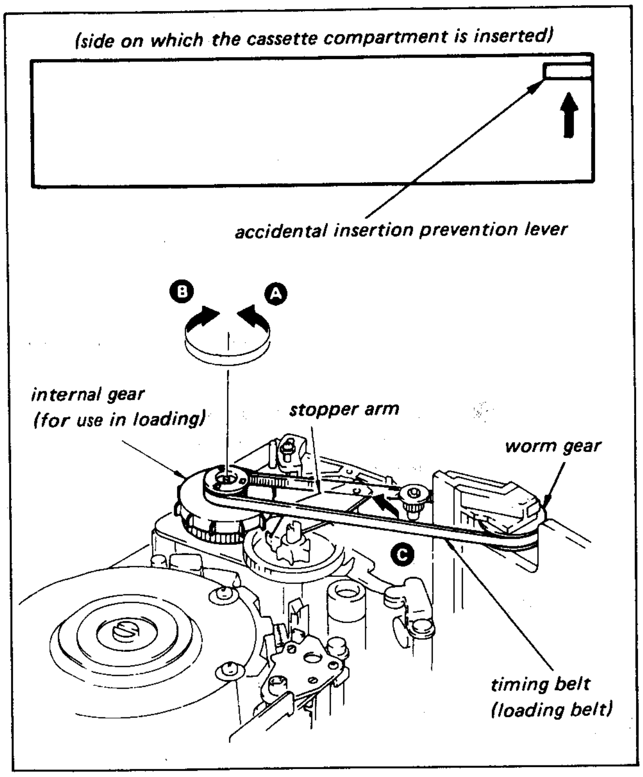

(side on which the cassette compartment is inserted)
accidental insertion prevention lever
Ⓑ
Ⓐ
internal gear
(for use in loading)
stopper arm
worm gear
Ⓒ
timing belt
(loading belt)

Fig. 1-13. Manual loading and unloading

1) Release the right accidental insertion prevention lever inside the cassette compartment, then press the stopper arm in the direction of arrow Ⓒ and release the internal gear stop.
2) Turn the internal gear manually in the direction of arrow Ⓐ until loading is completed.
3) To unload, turn the internal gear in the direction of arrow Ⓑ.

Note:

When the loading belt has been removed, load and unload by turning the worm gear manually.

1-12-2. Manual Threading and Unthreading

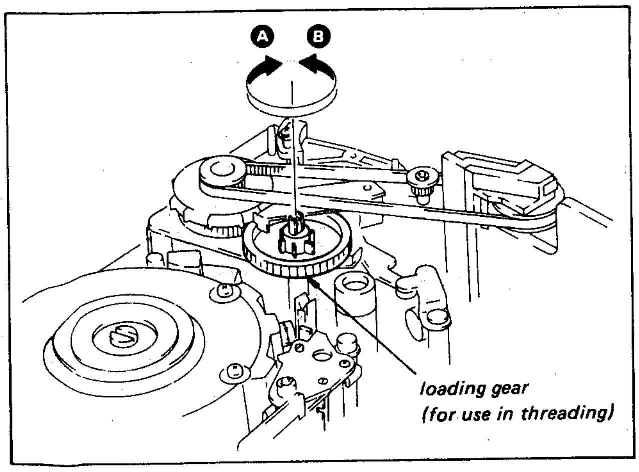

Ⓐ
Ⓑ
loading gear
(for use in threading)

Fig. 1-14. Manual threading and unthreading

1) Turn the loading gear in the direction of arrow Ⓐ until loading is completed.
2) To unthread, turn the loading gear in the directiono f arrow Ⓑ.

Note:

Always turn the loading gear sideways by hand. Never use a screwdriver or other tool.

1-13. TOOLS AND FIXTURES REQUIRED FOR SERVICING

Ref.No.	Name	Part Code	Carved Jig No.	Use and Remarks
J-1	Torque Measurement Tape	J-6080-003-C	SL-0003C	forward torque and back tension measurement
J-2	Parallel Plate	J-6086-750-A	SL-0657	audio/CTL head lateral adjustment capstan shaft vertical adjustment
J-3	Dental Mirror (handle) Dental Mirror (mirror)	J-6080-029-A J 6080 030 1	SL-5052	tape path and tape traveling adjustment check
J-4	Alignment Tape (KR5-1V)	8-969-995-92	——	tracking, overall adjustment of picture quality, etc.
J-5	Cleaning Fluid	Y-2031-001-0	——	
J-6	Thickness Gauge	9-911-053-00		
J-7	Chamois Cloth	2-034-697-00	——	cleaning
J-8	Head Demagnetizer	widely available	——	demagnetization of video head and audio head
J-9	Cleaning Cassette Tape	8-888-004-00	——	video head cleaning
J-10	Dihedral Adjustment Screw	J 6080 013 1	SL-0013	video dihedral adjustment
J-11	Video Head Checker	7-732-080-01	SL-5151	state of wear of video heads check

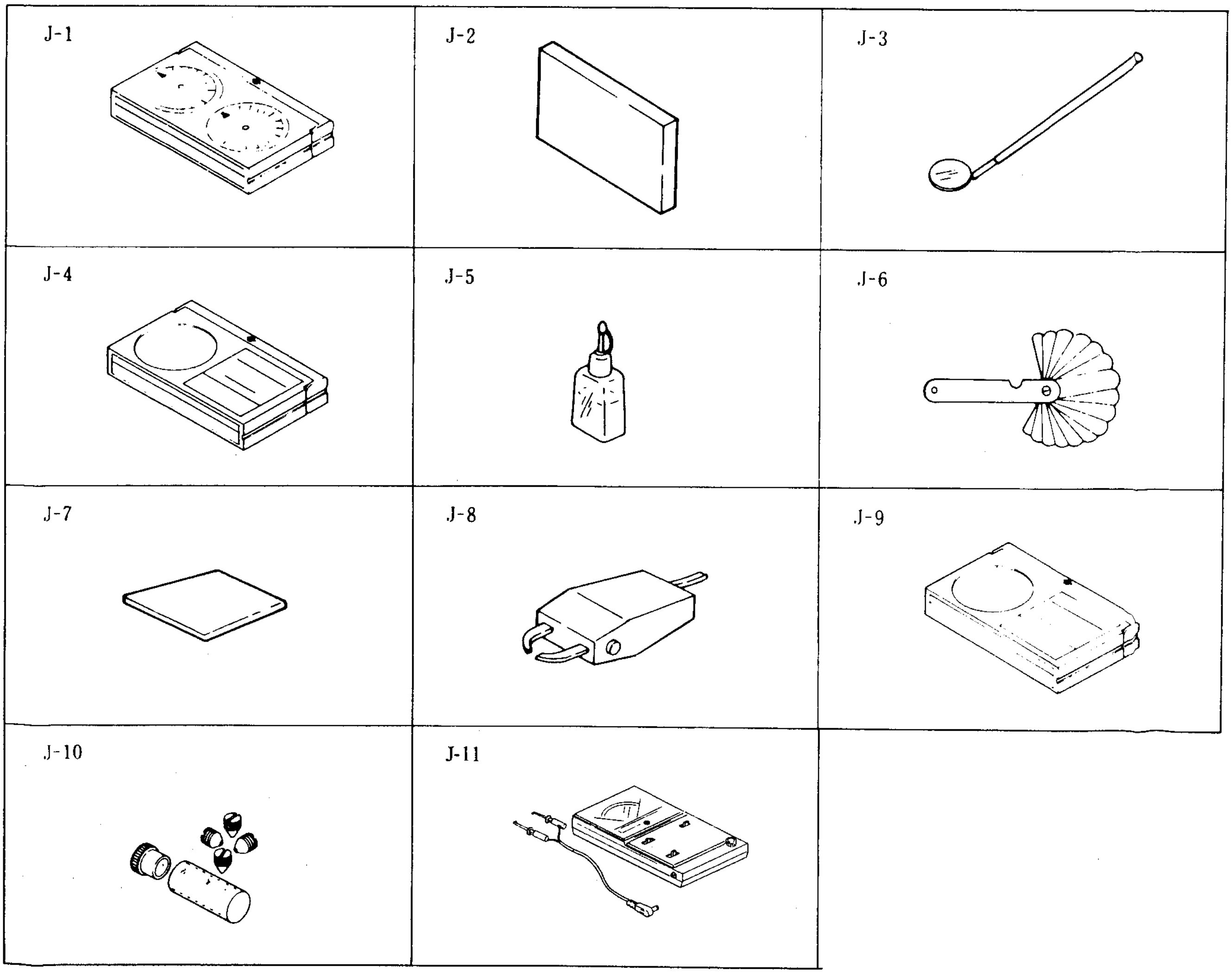


Fig. 1-15. Tools and fixtures required for servicing

2. PERIODC CHECK AND MAINTENANCE

In order to obtain the best performance from this unit and make full use of its capabilities, and to extend the life of the unit and tapes, it is recommended that the following periodic checks and maintenance be performed.

2-1. POST-REPAIR MAINTENANCE

The following must be done after every repair regardless of how many hours the user has operated the machine.

2-1-1. Cleaning of Rotating Head Disk Assembly

1) Press a chamois cloth (Jig Ref. No. J-7) which has been dipped in cleaning fluid (Jig Ref. No. J-5) lightly against the rotating drum assembly, then do the cleaning by slowly rotating the rotating head disk by hand. (Never try to clean by using the motor to turn it.)
2) Never try to clean by moving the chamois cloth at a right angle to the head tip. There is a very great danger of damaging the head tip if this is done.

2-1-2. Cleaning of the Tape Movement System

1) Clean the surfaces which the tape contacts during its movement (tape guide, drum assembly surface, capstan, pinch roller, etc.) with a chamois cloth that has been dipped in in cleaning fluid.

2-1-3. Cleaning the Drive System

1) Clean the driving parts with a cloth that has been dipped in cleaning fluid.

parts requiring cleaning

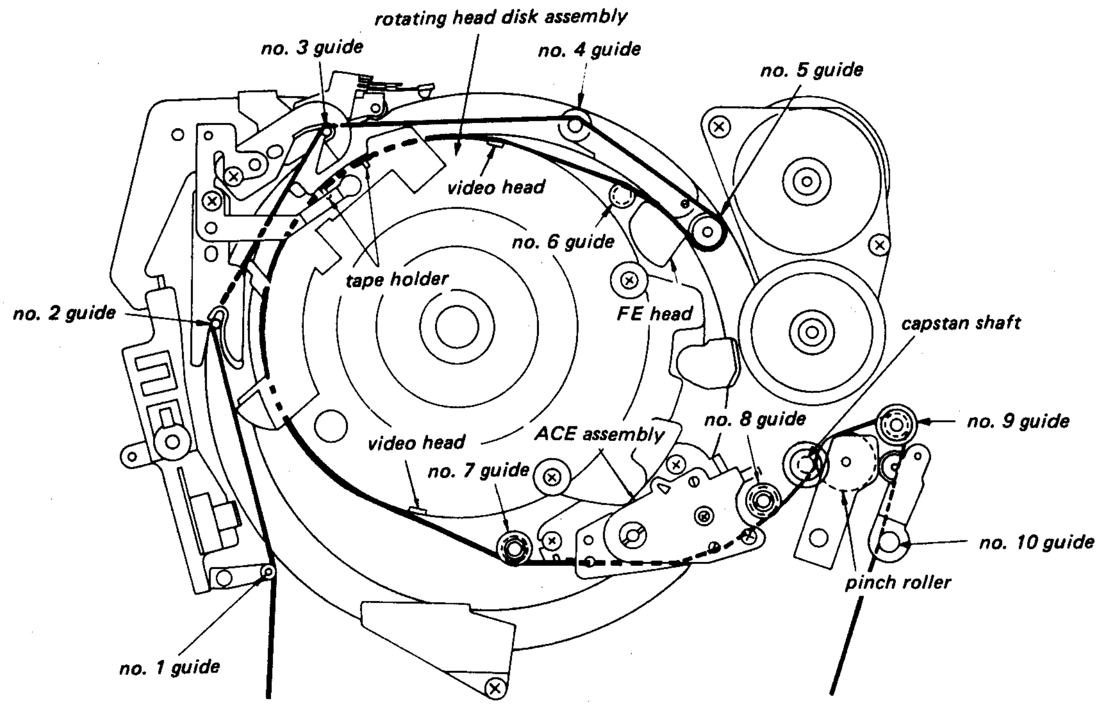

rotating head disk assembly
no. 3 guide
no. 4 guide
no. 5 guide
video head
no. 6 guide
tape holder
no. 2 guide
FE head
capstan shaft
no. 8 guide
no. 9 guide
video head
ACE assembly
no. 7 guide
no. 10 guide
pinch roller
no. 1 guide

Fig. 2-1. Parts requiring cleaning

2-2. PERIODIC CHECK ITEMS

Perform the maintenance and check listed on the table below. accoring to user's operating hours.

	Operating Hours (H) / Maintenance & Check	Replacement Part No.	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	Remarks
Tape Trans-Portation System	Cleaning of tape transportation system	———	○	○	○	○	○	○	○	○	○	○	This cleaning must be done whenever a repair is made.
	Cleaning and degaussing of AC ass'y	———	○	○	○	○	○	○	○	○	○	○	
	Cleaning & degaussing of video disk ass'y	———	○	○	○	○	○	○	○	○	○	○	The life of the head varies, depending on operational conditions and method.
Driving System	Loading belt (synchro belt)	3-684-264-00	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	This cleaning must be done whenever a repair is made.
	Cleaning of iron core and opening of solenoid	———	–	–	–	○	–	–	–	○	–	–	Wipe iron core and opening of solenoid with dry cloth.
Performance Confirmation	Abnormal sound		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust or replace the section which causes abnormal sound.
	Measurement of FWD back tension		–	☆	–	☆	–	☆	–	☆	–	☆	Confirmation must be made according to section Specified value: adjust to 44±4 g·cm (When measured with torque cassette tape)
	Confirmation of brake system		–	☆	–	☆	–	☆	–	☆	–	☆	Confirmation must be made according to section
	Confirmation of record & playback functions		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Perform the confirmation whenever repair is made.
	Measurement of forward torque		☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust to 45~90 g·cm (SL-0003C)

○ Cleaning ★ Replacement ☆ Confirmation

Note:

On overhaul

When overhauling the unit, replace parts as indicated in the above table.

3. CHECK, ADJUSTMENT, AND REPLACEMENT PROCEDURES

3-1. STATE OF WEAR OF VIDEO HEADS CHECK

As the accuracy of the check depends on the state of the heads and precision of the checker, the results should be taken only as an indication of the state of wear.

[Adjustment of video head checker]

1) Mechanical zero
   Verify that the pointer of the video head checker is at the mechanical zero position. If it is not at this position, adjust the mechanical zero control.
2) Battery voltage check
   Set the MODE switch to "BATT" and set the POWER switch to "ON". The deflection of the pointer should be within the range marked "BATT". If not, replace the battery (use a 6F22 battery) as follows.
3) Calibration check
   Set the POWER switch to "ON" and the MODE switch to "CAL", then adjust the CAL control so that the pointer is on the CAL mark.
   Note 1: Be sure to carry out this adjustment whenever the RANGE switch is changed.
   Note 2: Be sure to check CAL before measuring the head and proceed the measurement after adjusting CAL, if CAL is not properly set.

[Method of measurement]

1) Remove the two screws that hold the damper assembly in place, then remove the damper assembly.
2) Detach the lead wires on the 2 video heads.
3) Attach the measuring clips to the head leads.
   Be sure to separate the leads by at least 1.5 cm.
4) Set RANGE switch to "B" and MODE switch to "MEAS". The pointer will deflect to indicate the state of wear of the heads.
   Note: The deflection for the 2 video heads may be different, so be sure to measure both.

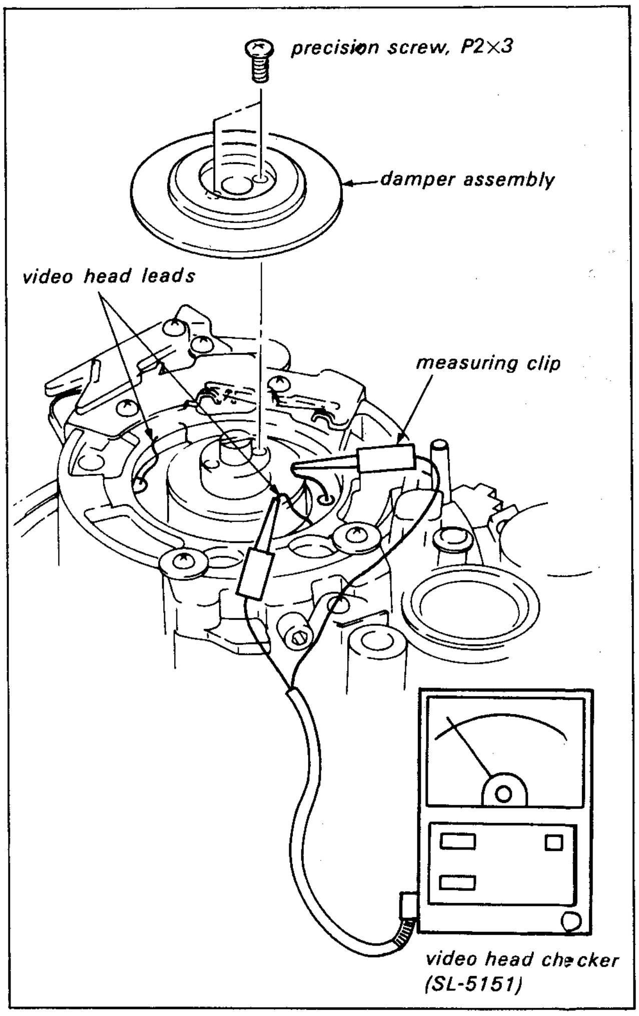

precision screw, P2×3
damper assembly
video head leads
measuring clip
video head checker
(SL-5151)

Fig. 3-1.

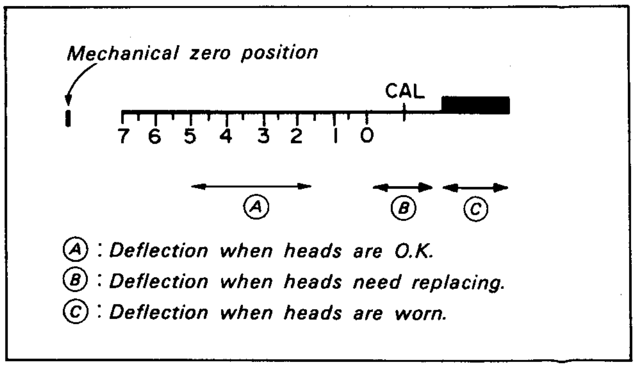

Mechanical zero position
CAL
7 6 5 4 3 2 1 0
Ⓐ
Ⓑ
Ⓒ
Ⓐ : Deflection when heads are O.K.
Ⓑ : Deflection when heads need replacing.
Ⓒ : Deflection when heads are worn.

Fig. 3-2. Measured value

3-2. REPLACEMENT OF ROTATING HEAD DISK ASSEMBLY

3-2-1. Removal of the Rotating Head Disk Assembly (Fig. 3-3)

❶ Remove the two screws that hold the damper assembly in place, then remove the damper assembly.

❷ Use a hexagonal wrench to remove the hexagonal socket bolt that holds the upper drum assembly in place, then remove the upper drum assembly.

Note:

Turn the upper drum to remove, being careful not to move the adjusting plate. Movement of the adjusting plate will have a great effect on the tape path, so caution is required.

❸ Unsolder the rotating head disk relay plate (4 red and white leads).

❹ Remove the two hexagonal socket bolts holding rotating head disk assembly ❺ in place, then remove the rotating head disk assembly.

Note:

Be careful not to touch the head tip with the hand or bang anything against it.

3-2-2. Mounting of the Rotating Head Disk Assembly (Fig. 3-3)

1) Insert rotating head disk ❺ in place, being careful of the direction so that the red and white leads are in the right places.
2) Tighten hexagonal socket bolt ❹ and solder the lead wires.

Note:

Be careful to solder the lead wires correctly and not to break any wires.

3) Attach the upper drum, being careful (as during removal) not to move the adjusting plate. While pressing the two points that determine the height, tighten hexagonal socket bolt ❷.

Note:

When inserting the upper drum, be careful that it does not touch the head tip.

Note:

When replacing the rotating drum head, it can happen that the rotating head disk assembly will be hard to remove. In such a case, remove it using the method explained below (Fig. 3-4)

❶ Remove the hexagonal socket bolts that hold the rotating head disk assembly in place.

❷ When the head disk is jammed on tight and is hard to remove, screw the hexagonal socket bolts removed in step ❶ into the threaded holes removed from the original holes by 90°. Tighten them a little at a time.

The head disk will be lifted up by the two screws and will come off easily.

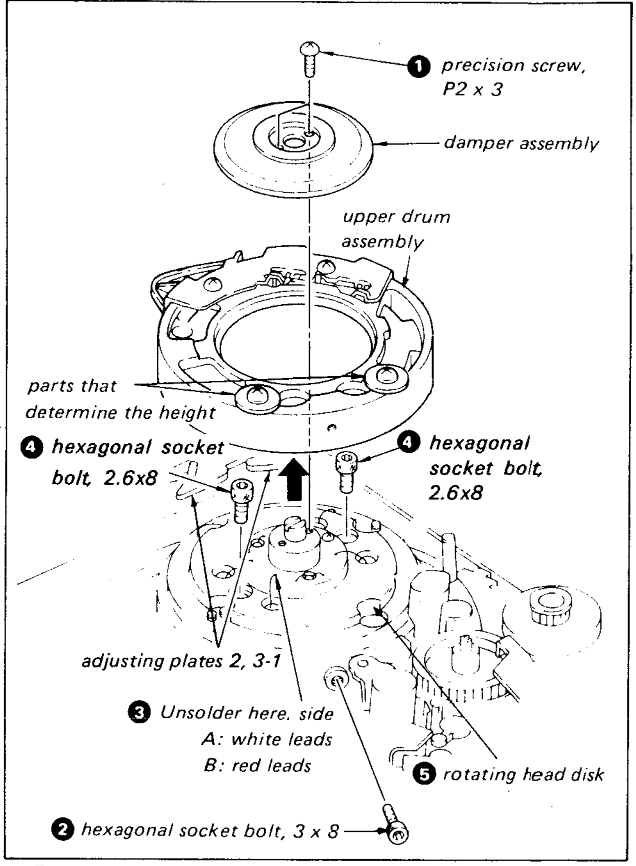

❶ precision screw, P2 x 3
damper assembly
upper drum assembly
parts that determine the height
❹ hexagonal socket bolt, 2.6x8
❹ hexagonal socket bolt, 2.6x8
adjusting plates 2, 3-1
❸ Unsolder here, side A: white leads B: red leads
❺ rotating head disk
❷ hexagonal socket bolt, 3 x 8

Fig. 3-3. Removal of the rotating head disk assembly I

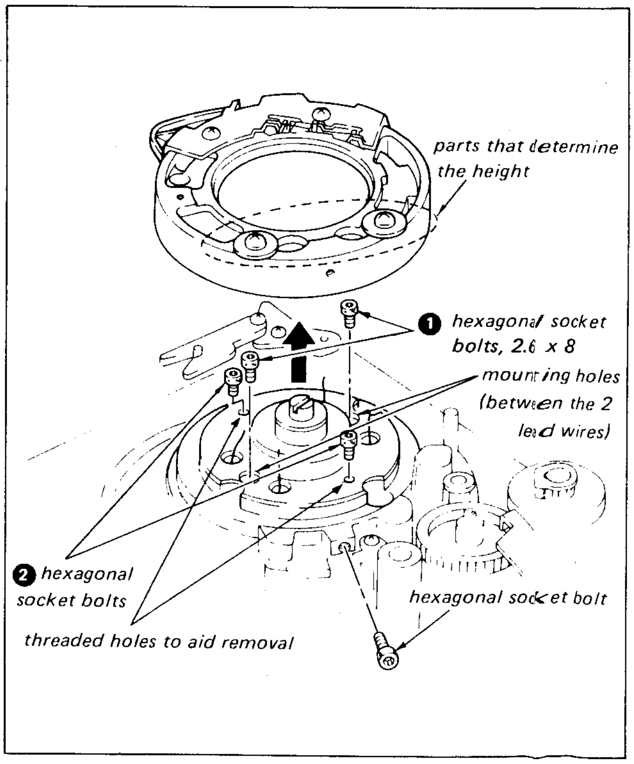

parts that determine the height
❶ hexagonal socket bolts, 2.6 x 8
mounting holes (between the 2 lead wires)
❷ hexagonal socket bolts
hexagonal socket bolt
threaded holes to aid removal

Fig. 3-4. Removal of the rotating head disk assembly II

3-3. VIDEO HEAD DIHEDRAL CHECK AND ADJUSTMENT

This adjustment is generally unnecessary, but it is sometimes necessary when the video head disk is replaced. (The video head disk used for maintenance has been precision adjusted at the factory using a microscope and almost never needs to be readjusted.)

When judging whether the video head dihedral angle is correct, the alignment tape is played back. When this is done the tracking control knob must be in the centering position. If the check is done with this knob in other than the center click position (if the tracking is off-center), even if the dihedral angle is correct the picture will be reproduced as if it were off.

Before this adjustment is performed, the AC assembly position adjustment (refer to the section where the tape path adjustment is described) must be completed.

[Method of checking]

With the tracking control knob set to the center click position, play back the βII monoscope section of the alignment tape. Check to see if any of the vertical monoscope lines immediately below the switching pulse are reproduced double. If not, the dihedral angle is correct and does not have to be adjustment. If so, perform the adjustment as explained below.

[Method of adjustment]

1) As shown in Fig. 3-5, screw two dihedral angle adjustment screws (Jig Ref. No. J-10) into the adjustment screw holes on the side on which the red lead wires from the video head are connected, until the top of the screw is level with the video head disk. (If they are not screwed in far enough, the video head disk will not turn past the point where the top of the adjustment screw strikes the upper drum. Conversely, if it is screwed in too far, the head base will be moved, throwing the video head dihedral angle way off.)

   Note:

   The side on which the white lead wires are connected is the reference side and must not be moved.

2) Screw one of the two adjustment screws in a little bit farther until resistance is felt. Beyond this point, turning the screw still farther will move the video head, adjusting the dihedral angle.

3) With the adjustment screws in place, play the βII monoscope signal section of the alignment tape and see how the lines are reproduced. If the vertical lines are split apart more than before, turn the screw which was screwed in more tightly counterclockwise to loosen it, then adjust by tightening the other screw.

4) After the adjustment is completed, remove the adjustment screws and play the tape again to reconfirm that the adjustment is correct.

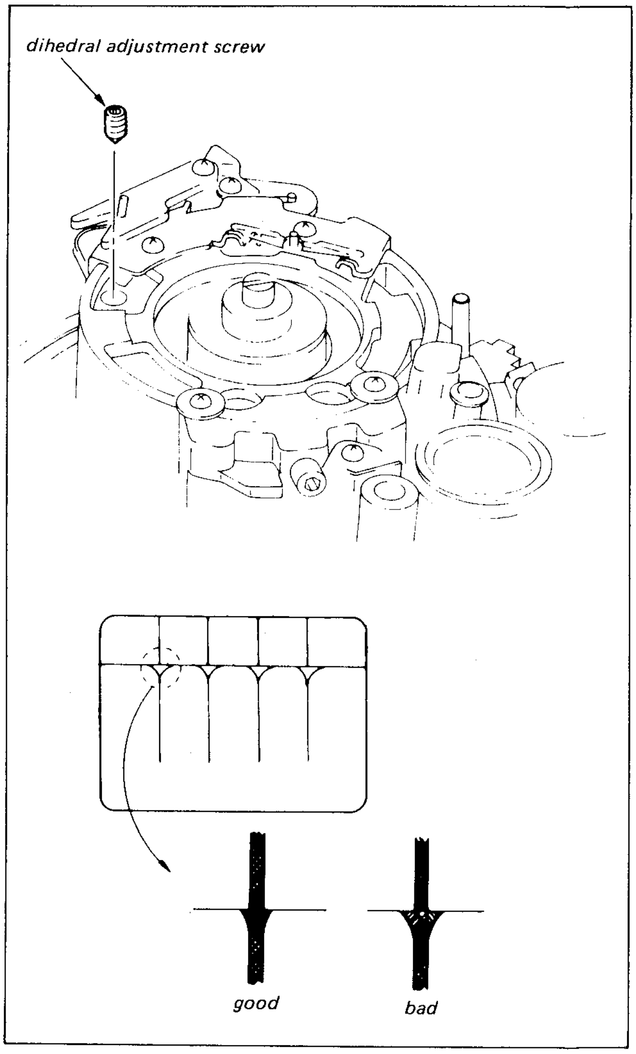


Fig. 3-5. Video head dihedral adjustment

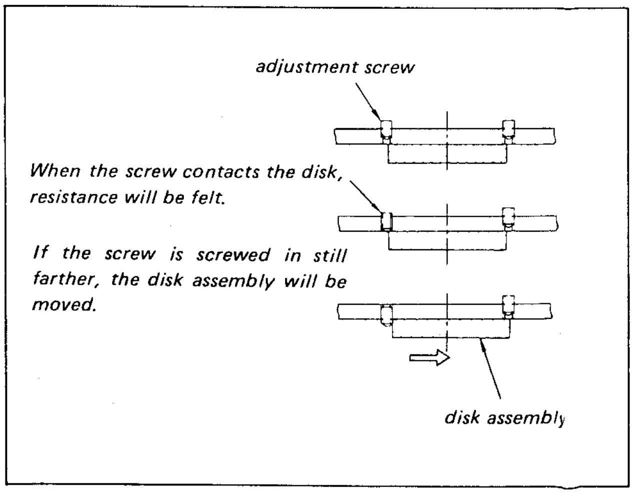

adjustment screw
When the screw contacts the disk, resistance will be felt.
If the screw is screwed in still farther, the disk assembly will be moved.
disk assembl

Fig. 3-6.

3-4. REPLACEMENT AND ADJUSTMENT OF THE DRUM ASSEMBLY

3-4-1. Replacement of the Drum Assembly

❶ Measure gap Ⓐ between adjusting plate 2 and the upper drum holder section, and record the measurement.
Note:
The position where the adjusting plate is mounted has a large effect on the tape path, so this measurement must be performed.

❷ Measure gap Ⓑ between adjusting plate 3-1 and the upper drum holder section, and record the measurement.
Note:
The position where the adjusting plate is mounted has a large effect on the tape path, so this measurement must be performed.

❸ Remove the screws shown in Fig. 3-7, then remove the tape guide ground plate and adjusting plates 1 and 2.

❹ Remove the 3 connectors from the rear of the chassis as shown in Fig. 3-8.

❺ Remove the 3 drum mounting screws from the rear of the chassis, then remove the main body of the drum assembly. After the replacement has been completed, adjust the drum path.

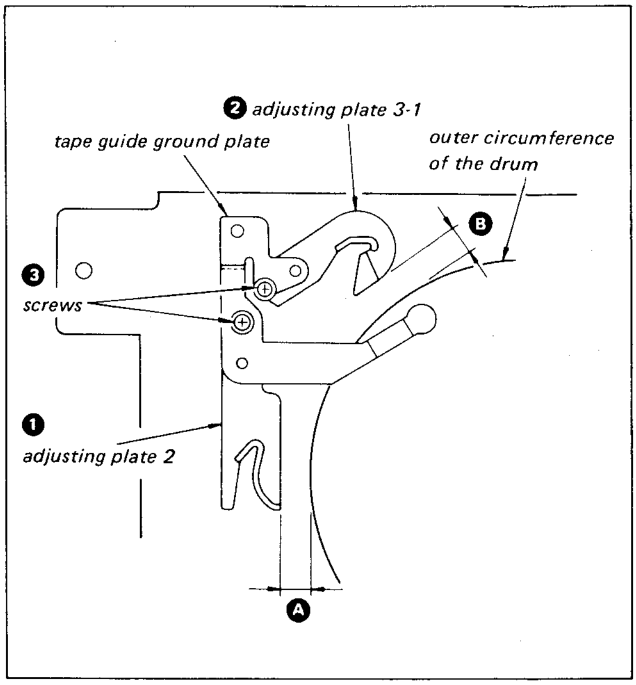

❷ adjusting plate 3-1
tape guide ground plate
outer circumference of the drum
Ⓑ
❸
screws
❶
adjusting plate 2
Ⓐ

Fig. 3-7. Measurement of the position of adjusting plates 2 and 3-1

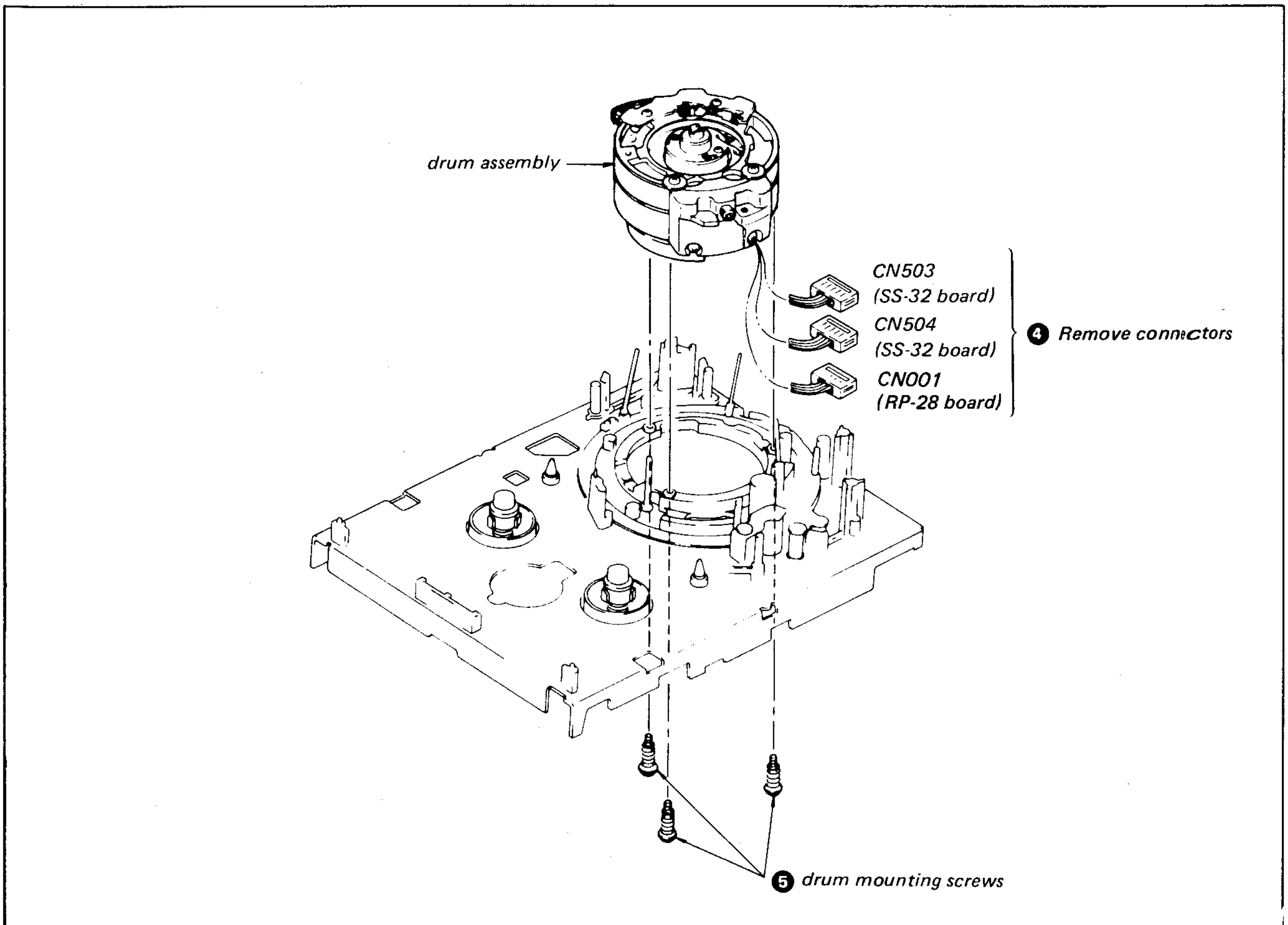

drum assembly
CN503
(SS-32 board)
CN504
(SS-32 board)
CN001
(RP-28 board)
❹ Remove connectors
❺ drum mounting screws

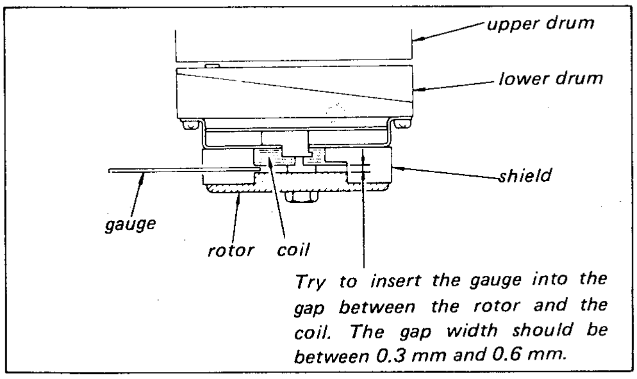
Fig. 3-8. Removal of the drum assembly

3-4-2. Adjustment of the Motor Gap when Replacing the Drum Assembly

After replacing the drum assembly, adjust the gap between the motor rotor and the coil to 0.3 mm to 0.6 mm (Fig. 3-9.).

[Procedure]

1) When re-assembling the drum, use the spacers which were removed to produce a gap of between 0.3 mm and 0.6 mm. Measure the gap using the gauge that comes with the drum for assembly and maintenance use. One side of the gauge is 0.3 mm and the other side is 0.6 mm. If the gap is adjusted correctly, the 0.3 mm side should fit in and the 0.6 mm side should not.
2) If this fails to give the correct gap width, do not use the spacers which were removed; instead, use a combination of the 4 0.3 mm accessory spacers to obtain the correct width.

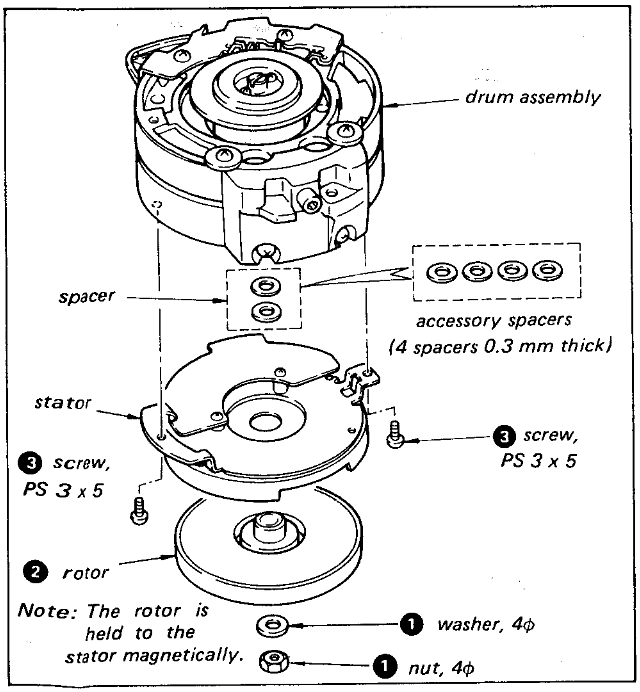

upper drum
lower drum
shield
gauge
rotor
coil

Try to insert the gauge into the gap between the rotor and the coil. The gap width should be between 0.3 mm and 0.6 mm.

Fig. 3-9. Checking the motor gap width after replacing the drum assembly

Removal of the stator and rotor when replacing the drum

❶ Remove the nut and washer.
❷ Remove the rotor from the stator.
❸ Remove the 2 screws, then remove the stator from the main body of the drum.


drum assembly
spacer
accessory spacers (4 spacers 0.3 mm thick)
stator
❸ screw, PS 3 x 5
❸ screw, PS 3 x 5
❷ rotor
❶ washer, 4φ
❶ nut, 4φ

Note: The rotor is held to the stator magnetically.

Fig. 3-10. Removal of the stator and rotor when replacing the drum

3-5. REPLACEMENT OF THE CAPSTAN MOTOR

3-5-1. Removal of the Capstan Motor (Fig. 3-11)

- Remove screw ❶, then remove the capstan motor from the rear of the mechanical chassis.

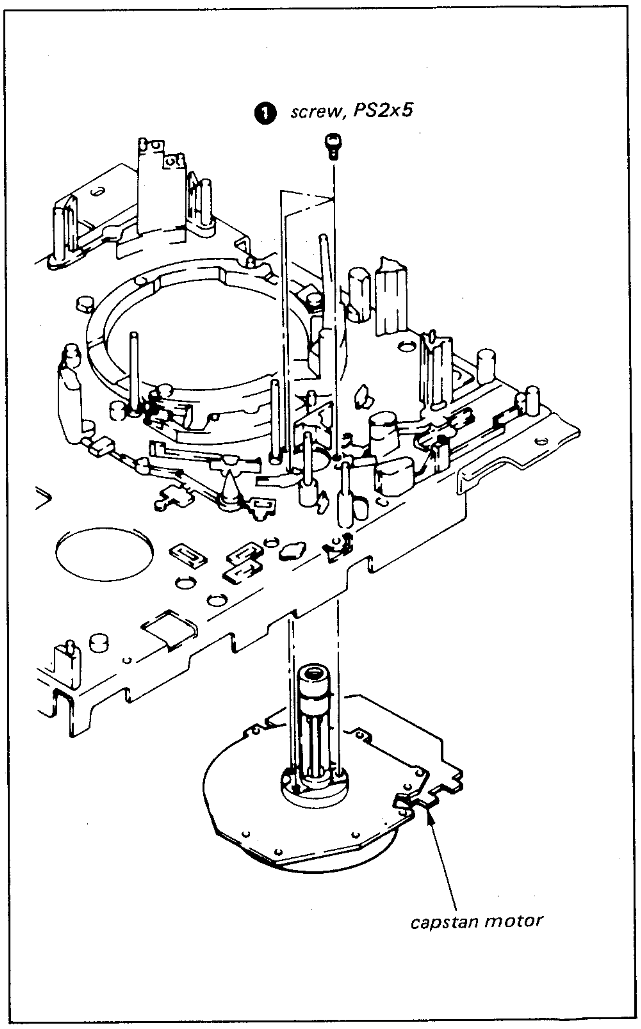

❶ screw, PS2x5
capstan motor

Fig. 3-11. Removal of the capstan motor

3-6. REMOVAL OF THE S COIL SENSOR (Fig. 3-12)

❶ Remove the spring.
❷ Remove the claw in the direction of arrow Ⓐ, then pull the S coil sensor out.
❸ Unplug the connector from CN2 on SS-32 board.

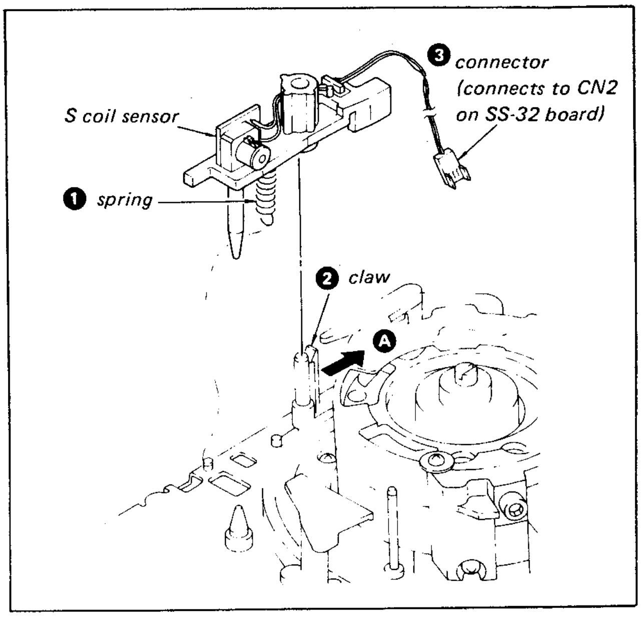

❸ connector (connects to CN2 on SS-32 board)
S coil sensor
❶ spring
❷ claw
Ⓐ

Fig. 3-12. Removal of the S coil sensor

3-7. REMOVAL OF THE FL CASSETTE COMPARTMENT ASSEMBLY (Fig. 3-13)

❶ Remove the four screws (BVTP3×8).
❷ Remove the internal gear flange.
❸ Remove the timing belt.
❹ Pull out the connector (CN12) from the SS-32 board.
❺ FL cassette compartment assembly in the direction indicated by the arrow Ⓐ.

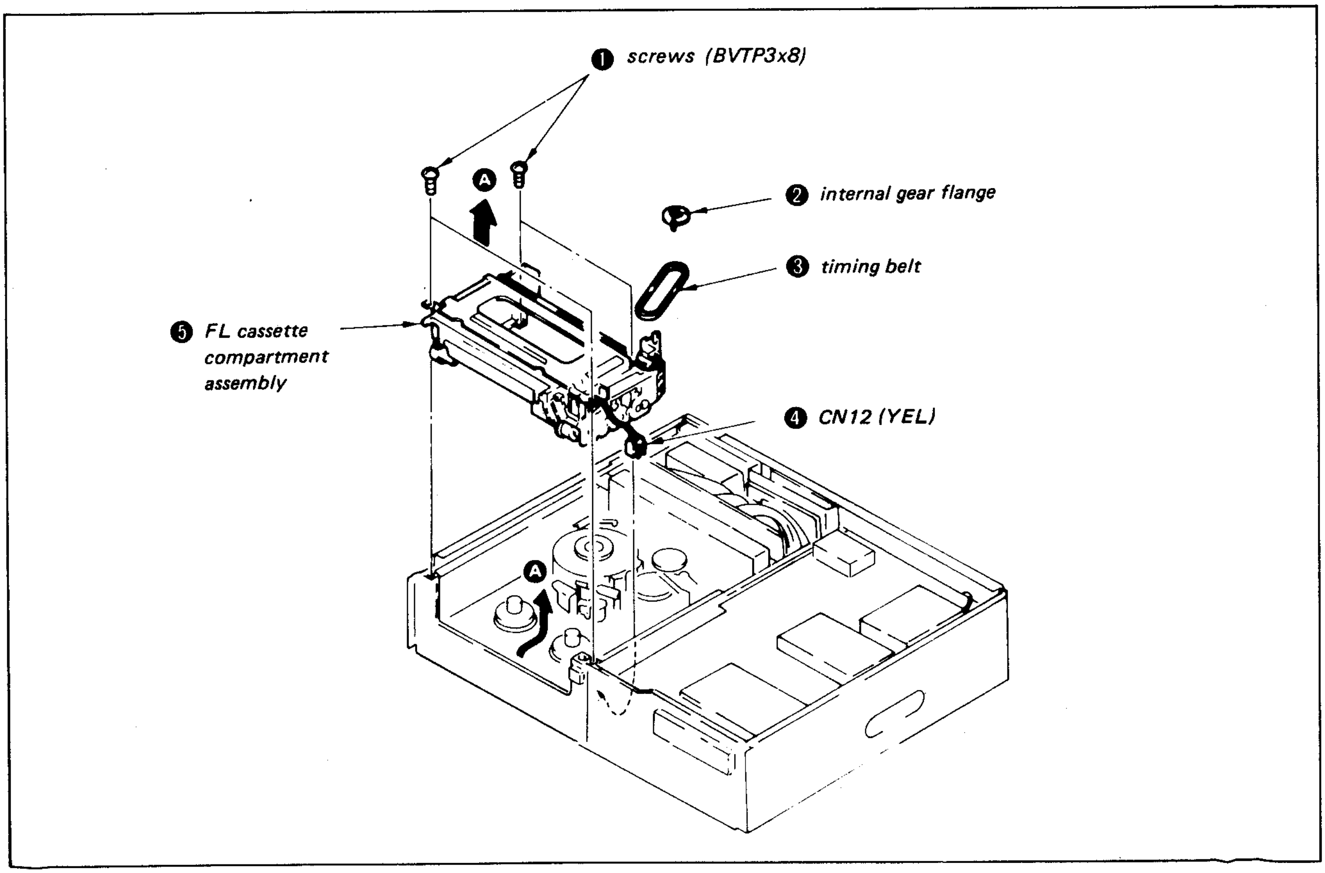

❶ screws (BVTP3x8)
Ⓐ
❷ internal gear flange
❸ timing belt
❺ FL cassette compartment assembly
❹ CN12 (YEL)
Ⓐ

Fig. 3-13. Removal of the FL cassette compartment assembly

3-8. ADJUSTMENT OF THE FL CASSETTE COMPARTMENT

3-8-1. Adjustment of the Position of the Right Gear of the FL Cassette Compartment Assembly

In the FL cassette compartment assembly, the cassette holder must always move parallel to the mechanical chassis. The gear system is used to control the amount by which the cassette holder advances so that this will be the case. Consequently, if the gears in this section slip out of mesh, the next time the unit is assembled the gear mesh must be adjusted to the correct position; otherwise the cassette will not feed properly.

[Adjustment of the gear positions]

❶ Get a positioning rod about 200 mm long and 1.5 mm in diameter ready.

❷ While passing the positioning rod through the combination of the drive arm right and cassette ON cam, fit the latter on the right side plate. Similarly, fit the drive arm left onto the left side plate.

❸ Similarly, while passing the positioning rod through the worm wheel, fit the latter onto the right side plate.

❹ Similarly, while passing the positioning rod through the combination of the limiter gear and cassette OFF cam, fit the latter onto the right side plate.

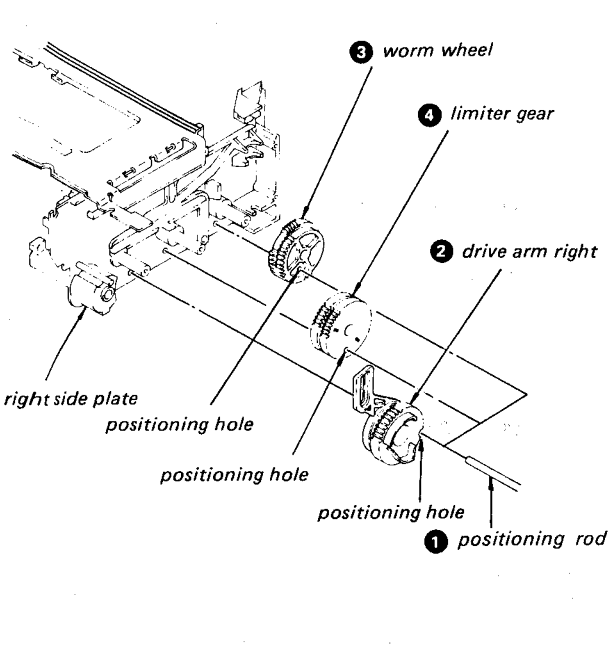

❸ worm wheel
❹ limiter gear
❷ drive arm right
right side plate
positioning hole
positioning hole
positioning hole
❶ positioning rod

Fig. 3-14. Positioning of the FL cassette compartment gears

3-8-2. Cassette ON Switch Operation Check and Adjustment

[Method of checking]

When inserting a cassette into the FL cassette compartment assembly, confirm that, as the cassette is inserted, the microswitch comes ON when the center of the drive roller is 10 to 13 mm from the end of the guide groove, as shown in Fig. 3-15. (A clicking sound can be heard after the switch is pressed.)

[Method of adjustment]

Bend the tip of the cassette ON switch in the direction of the arrow.

Adjust so that the cassette ON switch comes ON when the above distance is 10 to 13 mm, and finally tighten the screw.

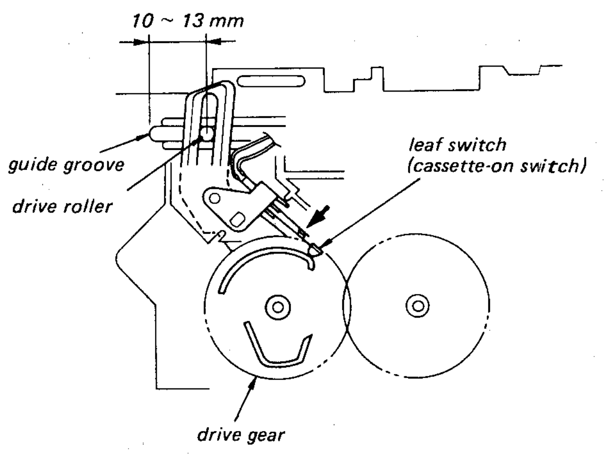

10 ~ 13 mm
guide groove
drive roller
leaf switch
(cassette-on switch)
drive gear

Fig. 3-15. Cassette ON switch operation check and adjustment

3-8-3. Checking and Adjustment of the Cassette Door Assembly

[Method of checking]

With the door opening and closing arm returned all the way in the direction of arrow Ⓐ, check to make sure that the upper and lower doors are vertical.

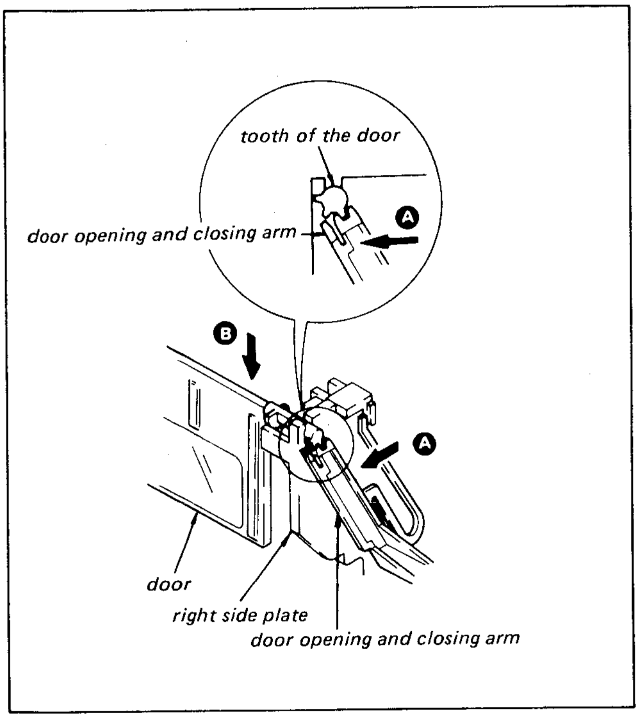

tooth of the door
door opening and closing arm
Ⓐ
Ⓑ
Ⓐ
door
right side plate
door opening and closing arm

Fig. 3-16. Adjustment of the position of the cassette door assembly

[Method of adjustment]

check to make sure that the door opening and closing rack plate has returned all the way. Then, close the upper door together in the drection of arrow Ⓑ so that it is vertical, and mesh the gears.

3-8-4. Mounting the FL Cassette Compartment Assembly (Fig. 3-17.)

❶ Hook the two holes of the FL cassette compartment assembly onto the mechanical chassis, then place the compartment in the specified position on the chassis.

❷ Loosely tighten the 4 mounting screws of the FL cassette compartment assembly. Move the FL cassette compartment assembly forward and backward with respect to the mechanical chassis, set it in the correct position, then tighten the mounting screws all the way.

❸ Connect the timing belt (loading belt) between the threading motor and the worm gear, then hold it in place with the internal gear flange.

❹ Press the tension roller arm in the direction of the arrow to adjust the tension of the timing belt (loading belt), then fix it in place with the arm fixing screw.

❺ Insert the harness sticking out from the FL cassette compartment into connector CN12 on SS-32 board.

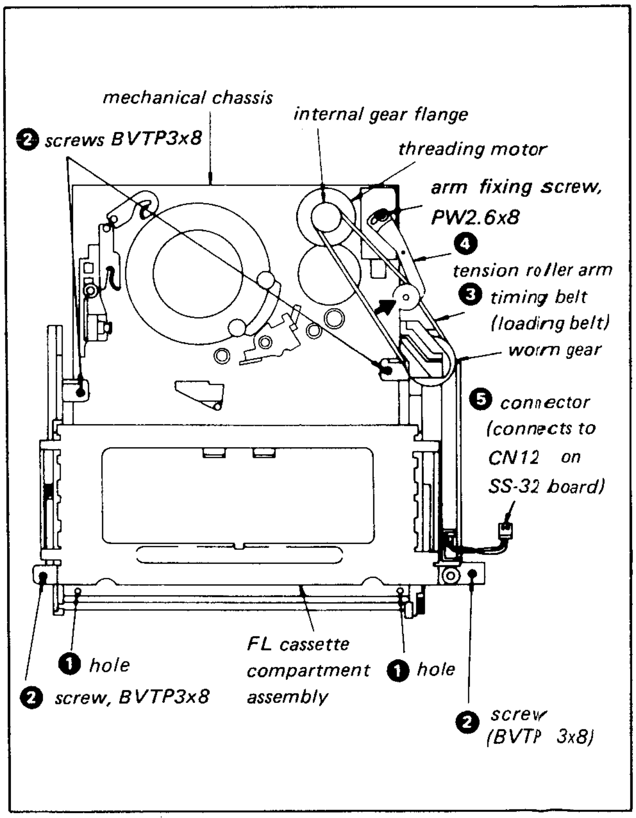
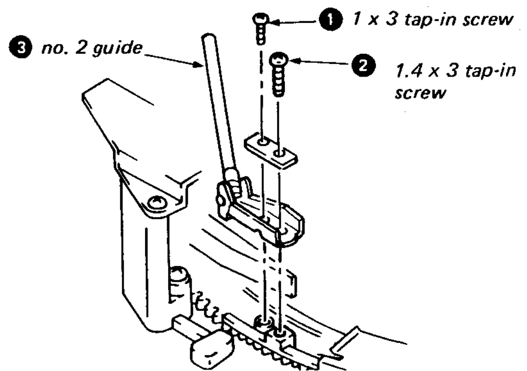

mechanical chassis
internal gear flange
❷ screws BVTP3x8
threading motor
arm fixing screw, PW2.6x8
❹
tension roller arm
❸ timing belt (loading belt)
worm gear
❺ connector (connects to CN12 on SS-32 board)
❶ hole
❷ screw, BVTP3x8
FL cassette compartment assembly
❶ hole
❷ screw (BVTP 3x8)

Fig. 3-17. Mounting the FL cassette compartment assembly

3-9. REMOVAL OF THE No. 2 AND No. 3 GUIDES

3-9-1. Removal of the No. 2 Guide

❶ Remove the 1×3 tap-in screw.
❷ Remove the 1.4×3 tap-in screw.
❸ Remove the No. 2 guide assembly.


❶ 1 x 3 tap-in screw
❸ no. 2 guide
❷ 1.4 x 3 tap-in screw

<To remount>

1) *Loosely tighten the 1 x 3 tap-in screw.*
2) *Tighten the 1.4 x 3 tap-in screw all the way.*
3) *Adjust the 1 x 3 tap-in screw until the height is 35 mm. After adjustment, lock the screw.*
   Note: The no. 2 guide is up all the way.

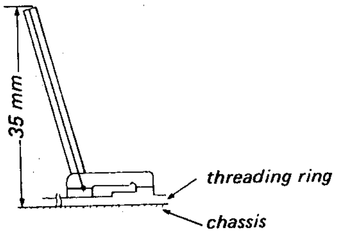
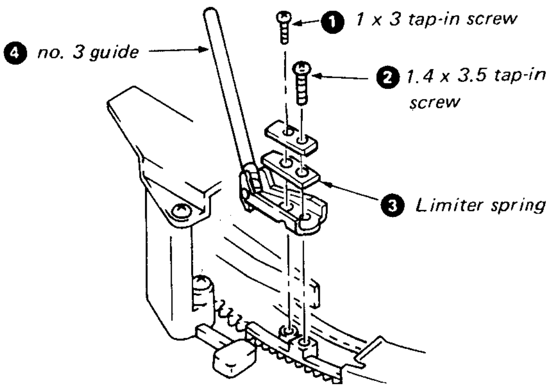

35 mm
threading ring
chassis

Fig. 3-18. Removal of the no. 2 guide

3-9-2. Removal of the No. 3 Guide

❶ Remove the 1×3 tap-in screw.
❷ Remove the 1.4×3.5 tap-in screw.
❸ Remove the limiter spring.
❹ Remove the No. 3 guide assembly.


❶ 1 x 3 tap-in screw
❹ no. 3 guide
❷ 1.4 x 3.5 tap-in screw
❸ Limiter spring

<To remount>

1) *Loosely tighten the 1 x 3 tap-in screw.*
2) *Tighten the 1.4 x 3.5 tap-in screw all the way.*
3) *Adjust the 1 x 3 tap-in screw so that the height is 30 mm. After adjustment, lock the screw.*
   Note: The no. 3 guide is up all the way.

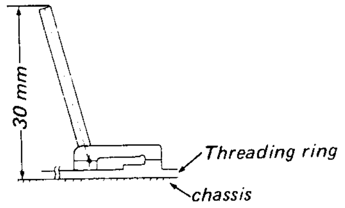

30 mm
Threading ring
chassis

Fig. 3-19. Removal of the no. 3 guide

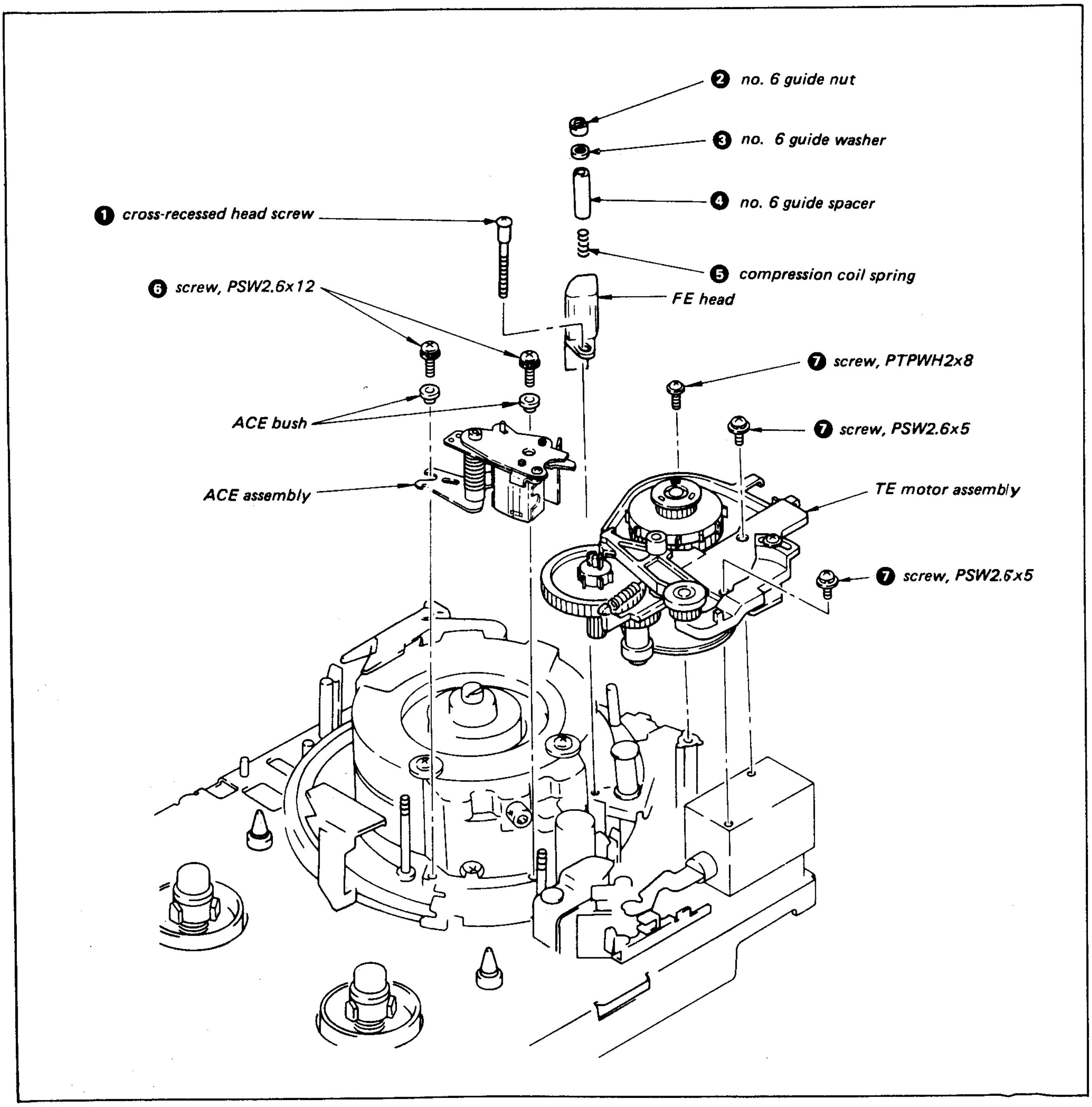
3-10.REPLACEMENT AND ADJUSTMENT OF THE S THREADING RING

3-10-1.Preparation to Remove the S Threading Ring Removal of the AC Assembly, FE Head and Threading Motor (Fig. 3-20)

❶ Remove the cross-recessed head screw.
❷ Remove the No. 6 guide nut.
❸ Remove the No. 6 washer.
❹ Remove the No. 6 guide spacer.
❺ Remove the compression coil spring.
❻ Remove the 2 screws and AC bush, then remove the AC assembly and the FE head.

Note:
Since the AC assembly and the FE head are connected by a lead wire, be careful when removing them. It is not necessary to remove the compression coil spring below the AC assembly, but be careful not to use it.

❼ Remove the 3 screws, then remove the threading motor assembly by pulling it up and out.


❷ no. 6 guide nut
❸ no. 6 guide washer
❹ no. 6 guide spacer
❶ cross-recessed head screw
❺ compression coil spring
❻ screw, PSW2.6x12
FE head
❼ screw, PTPWH2x8
ACE bush
❼ screw, PSW2.6x5
ACE assembly
TE motor assembly
❼ screw, PSW2.6x5

Removal of Miscellaneous Parts (Fig. 3-21)

Proceeding in the same manner as in replacement of the drum assembly, measure the width of the gap between the upper drum and the adjusting plates (Fig. 3-7.).

❶ Remove the screw, then remove the tape guide ground plate and adjusting plates 3-1 and 2.

❷ Remove the two screws, then remove the tape holder assembly.

❸ Remove the screw, then remove the guide plate.

❹ Remove the 2 PTPWH2×8 screws and the M2.6 screw, then remove shuttle guide 2.

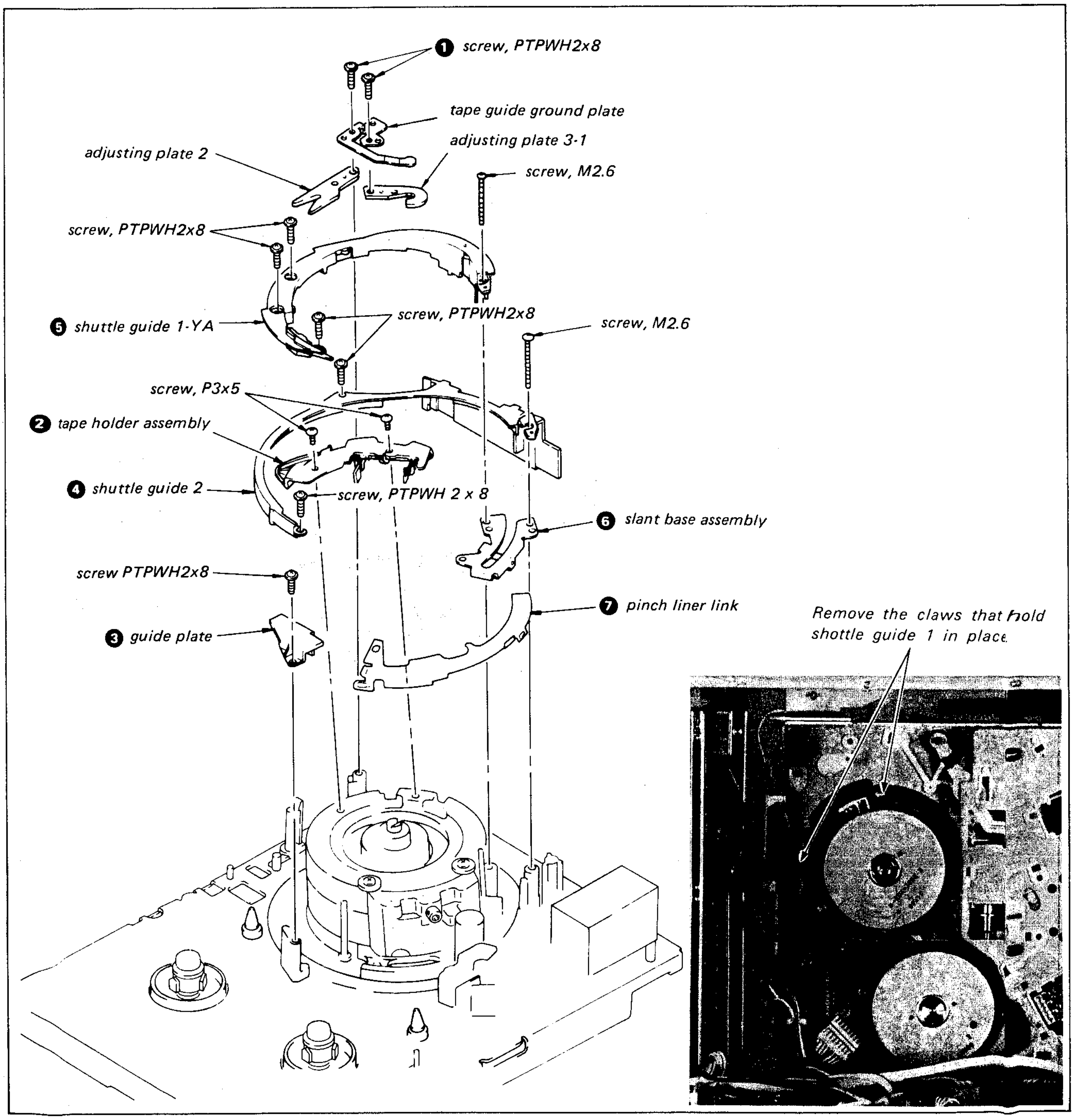
❺ Remove the 3 PTPWH2×8 screws and the M2.6 screw. Then remove the 2 claws holding shuttle guide 1-YA in place, and finally remove shuttle guide 1-YA.

❻ Remove the slant base assembly.

❼ Remove the BVTT2.6×6 screw, then remove the pinch liner link.

Note:

After removing the guide plate, do not thread or unthread a tape with the shuttle guide mounted.


❶ screw, PTPWH2x8
tape guide ground plate
adjusting plate 3-1
adjusting plate 2
screw, M2.6
screw, PTPWH2x8
❺ shuttle guide 1-YA
screw, PTPWH2x8
screw, M2.6
screw, P3x5
❷ tape holder assembly
❹ shuttle guide 2
screw, PTPWH 2 x 8
❻ slant base assembly
screw PTPWH2x8
❼ pinch liner link
❸ guide plate

Remove the claws that hold shottle guide 1 in place.

Fig. 3-21. Removal of miscellaneous parts

3-10-2. Removal of the S Threading Ring (Fig. 3-22)

❶ Turn the stop washer and remove the ring roller (B) and (C).

❷ Remove the screw. then remove the ring roller adjustment

❸ plate.

Remove the S threading ring.

Note:

Once a stop washer has been removed, do not use it again.

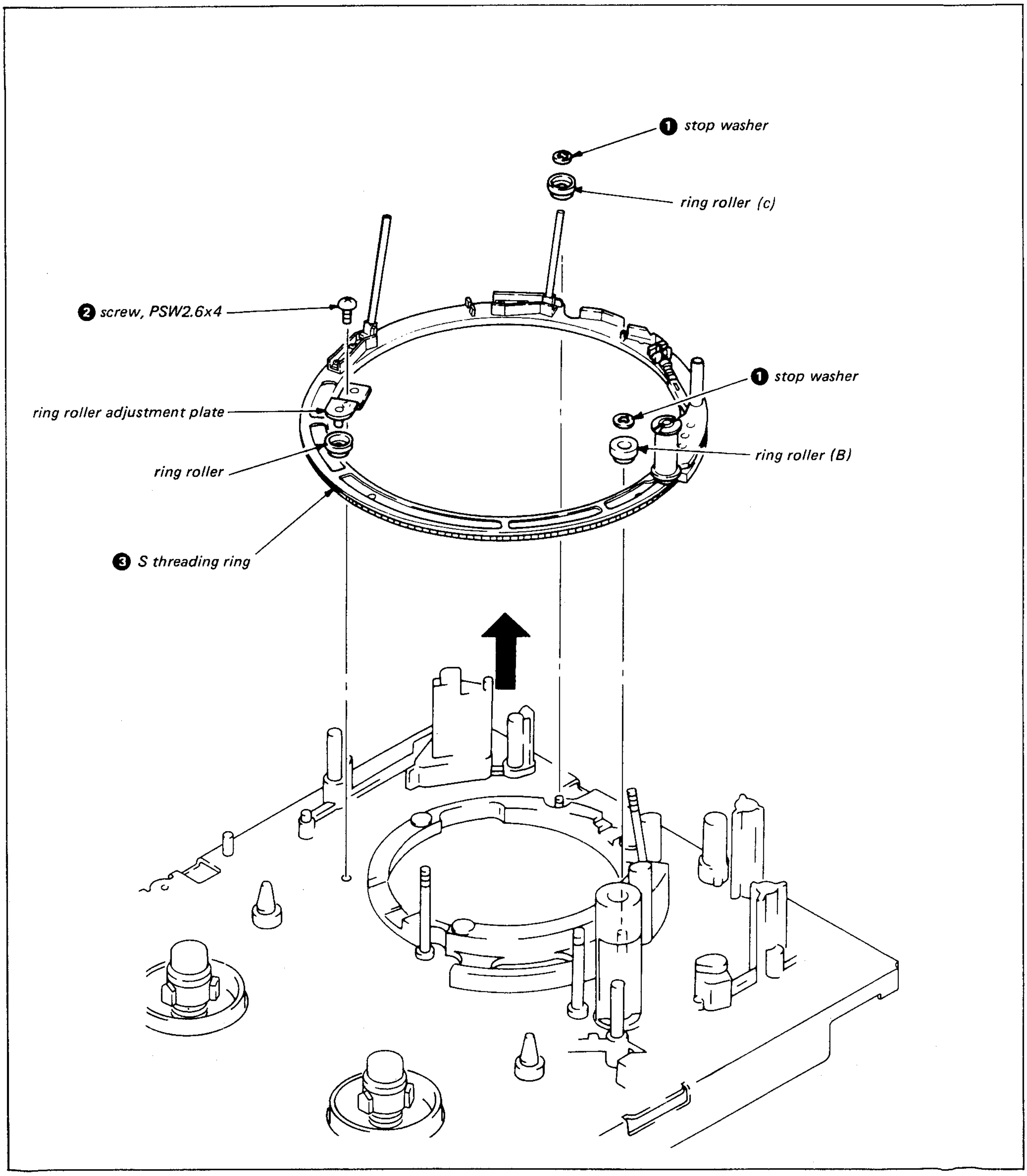

❶ stop washer
ring roller (c)
❷ screw, PSW2.6x4
❶ stop washer
ring roller adjustment plate
ring roller
ring roller (B)
❸ S threading ring

Fig. 3-22. Removal of the S threading ring

3-10-3. S Threading Ring Mounting and Position Adjustment (Fig. 3-23)

❶ Set the slider gear assembly in the unthreading completed position.
(Slider gear assembly set so that it is up against part T slider stop mold.)

❷ In this condition, fit the threading ring into place, match the chassis hole (3φ) of part Ⓐ with the S threading ring hole (1.5φ), and mesh with the drive gear teeth.

❸ Attach ring roller (B) and fix in place with a stop washer.

❹ Attach the ring roller, and fix in place with the adjustment plate.

Note:

After replacement and mounting are completed, adjust the AC assembly as explained in the section on tape path adjustment.

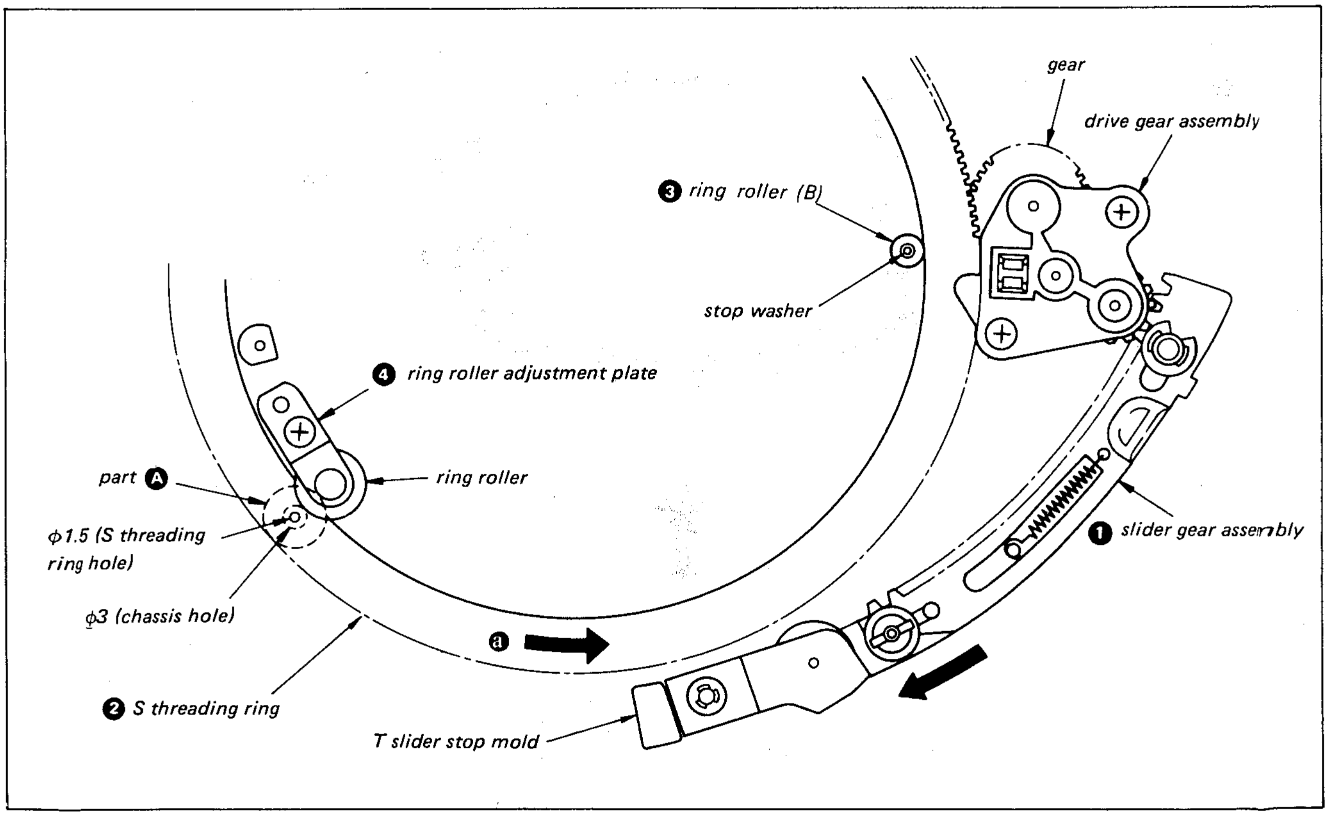

gear
drive gear assembly
❸ ring roller (B)
stop washer
❹ ring roller adjustment plate
ring roller
part Ⓐ
φ1.5 (S threading ring hole)
φ3 (chassis hole)
ⓐ
❶ slider gear assembly
❷ S threading ring
T slider stop mold

Fig. 3-23. S threading ring position adjustment

3-11. PINCH SNAP-FIT LIMITER GAP CHECK AND ADJUSTMENT

[Method of checking]

1) Set in the threading completed condition.
2) With the plunger pushed in all the way, confirm that the thickness of the pinch snap-fit limiter gap is 0.4 mm to 0.6 mm. If it is not, adjust as explained under [method of adjustment] below.

[Method of adjustment]

❶ With the pinch solenoid in the absorbed condition (when the plunger is pushed in all the way), loosen the adjustment screw.

❷ Press the pinch limiter adjustment plate in the direction of arrow ⓐ with an ordinary screwdriver, as in section Ⓐ in the diagram, and adjust until the thickness of the gap in 0.4 mm to 0.6 mm.
Tighten the adjustment screw and then lock it to fix everything in place.

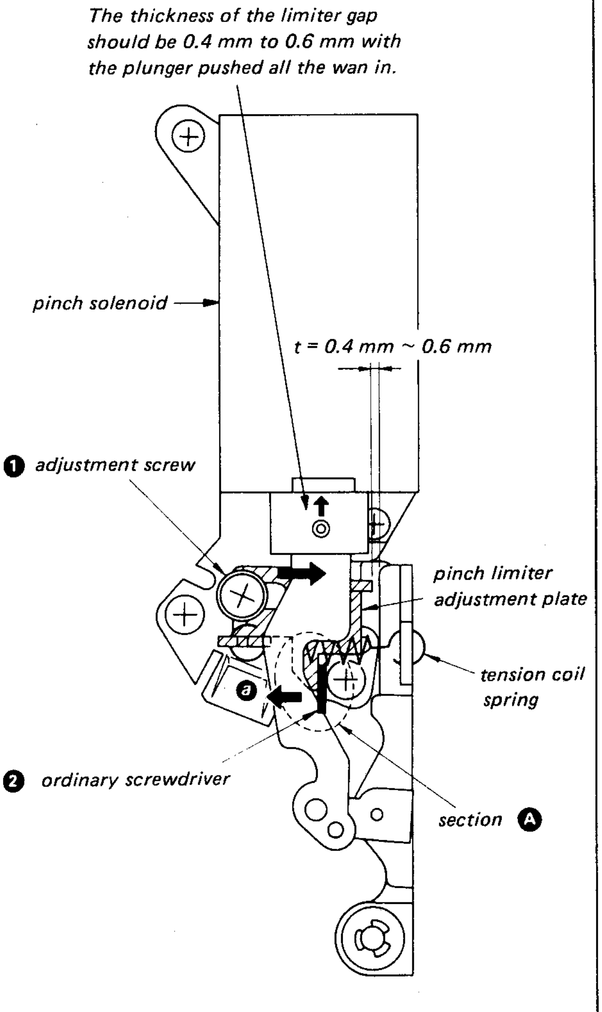

The thickness of the limiter gap should be 0.4 mm to 0.6 mm with the plunger pushed all the wan in.
pinch solenoid
t = 0.4 mm ~ 0.6 mm
❶ adjustment screw
pinch limiter adjustment plate
tension coil spring
ⓐ
❷ ordinary screwdriver
section Ⓐ

Fig. 3-24. Pinch snap-fit limiter gap adjustment plate

3-12. THREADING END SWITCH AND T COIL SENSOR

3-12-1. Threading End Switch (TE Switch) Position Check and Adjustment

[Method of checking]

Turn the S threading ring manually. Check to make sure that, when the lock roller moves from above the straight line part of the notch in the ring(Fig. 3-25.section Ⓐ) to 1/3 of the way down it and back, the TE switch turns ON and OFF. This can be confirmed from the clicking sound.
If the lock roller has to move outside of this range before the switch will turn ON and OFF, adjust as explained below.

[Method of adjustment]

1) Set the lock roller between the top of the notch in the S threading ring and 1/3 of the way down it, turn the TE switch in the direction of the arrow and, when the switch turns ON (with a clicking sound), fix the TE switch in place.
2) When the adjustment is completed, repeat the check as described under [method of checking].

[Removal]

❶ Remove the tension coil spring that is attached to the S coil sensor assembly, then remove the S coil sensor.
❷ Remove the lock arm assembly in te direction of arrow Ⓐ .

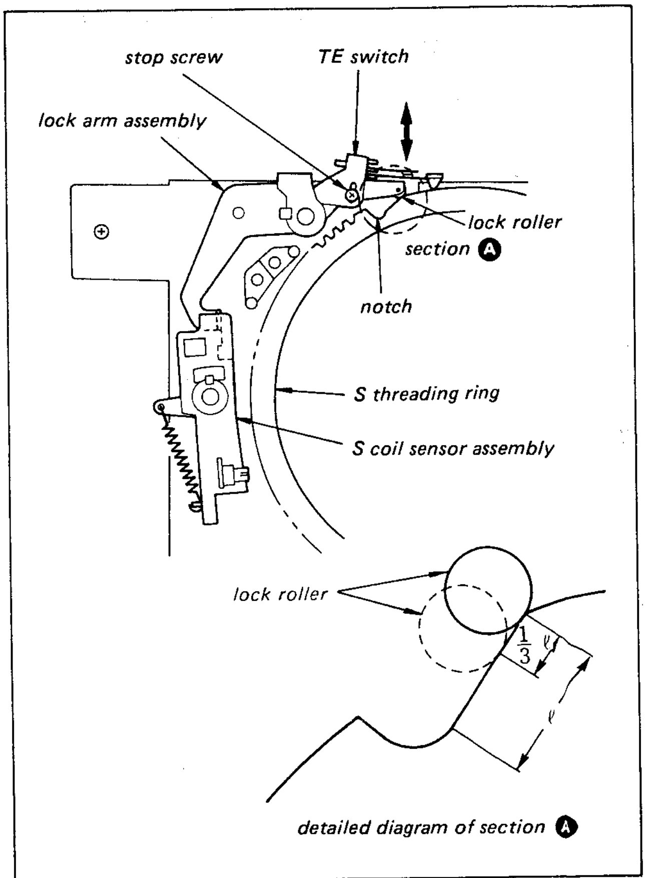

stop screw
TE switch
lock arm assembly
lock roller
section Ⓐ
notch
S threading ring
S coil sensor assembly
lock roller
$\frac{1}{3}\ell$
ℓ
detailed diagram of section Ⓐ

Fig. 3-25. TE switch position adjustment

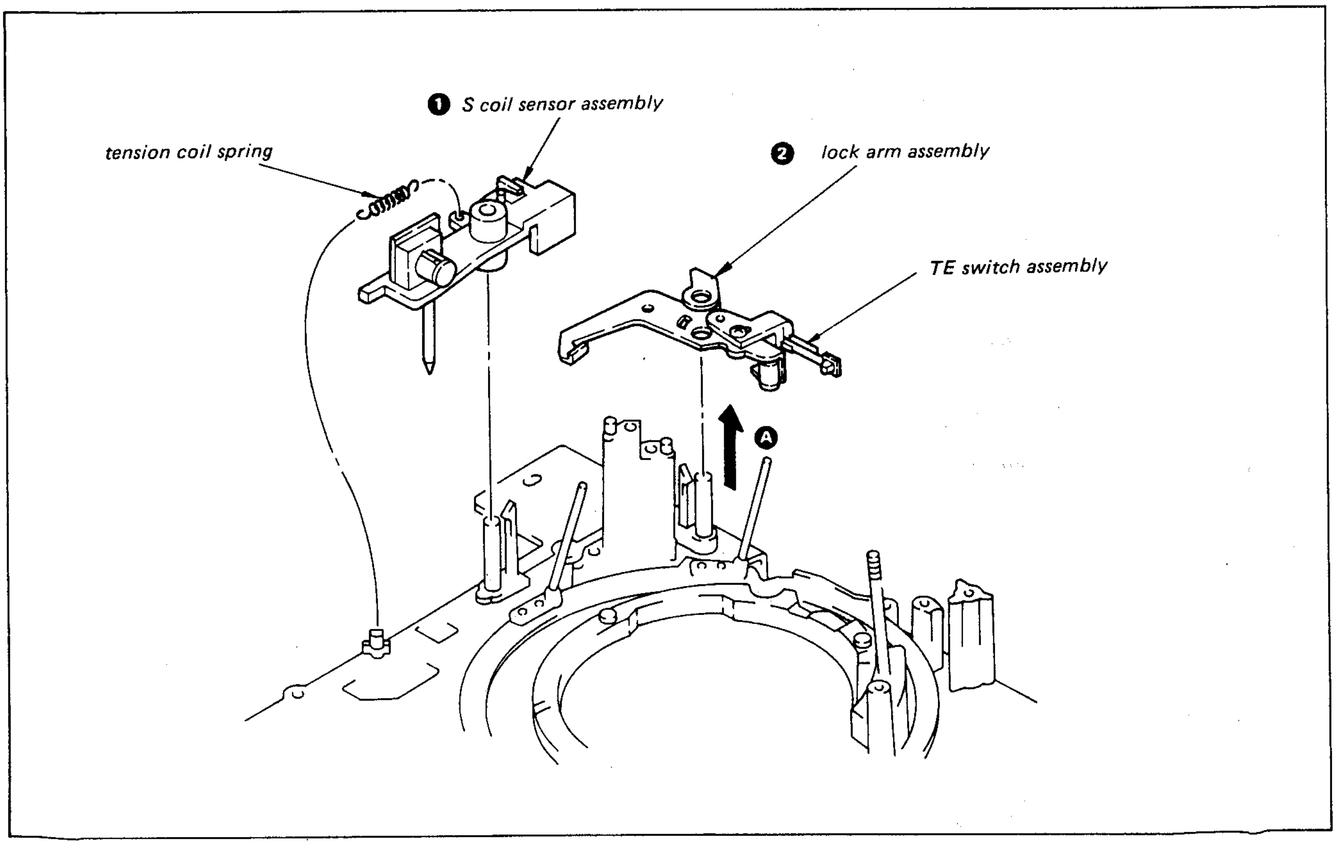

❶ S coil sensor assembly
tension coil spring
❷ lock arm assembly
TE switch assembly
Ⓐ

Fig. 3-26. Removal of the TE switch assembly and lock arm assembly

3-12-2. T Coil Sensor Mounting and Operation Check

[Method of checking]

Confirm that T coil sensor link ❶ is pressed and T coil sensor ❷ moves in the direction of arrow Ⓑ when the T slider gear assembly is moved in the direction of arrow Ⓐ.

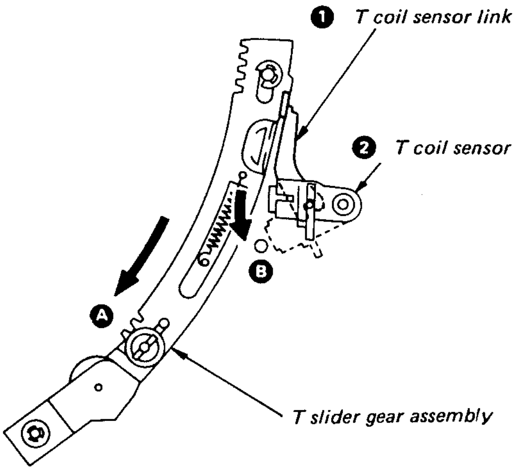

❶ T coil sensor link
❷ T coil sensor
Ⓑ
Ⓐ
T slider gear assembly

Fig. 3-27. T coil sensor operation check.

[Method of mounting]

❶ Place T coil sensor link in the prescribed position.
❷ Match up the T coil sensor hole with the chassis shaft Ⓐ and insert. Place so that it engages with T coil sensor link.
❸ Hook the tension coil spring on the T coil sensor and chassis claw.

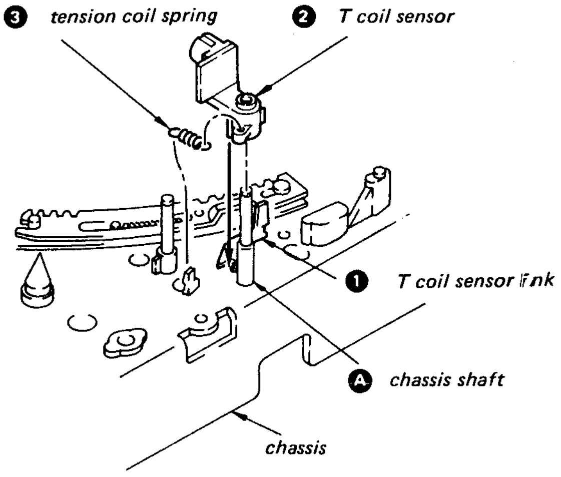

❸ tension coil spring
❷ T coil sensor
❶ T coil sensor link
Ⓐ chassis shaft
chassis

Fig. 3-28. T coil sensor link and T coil sensor mounting

3-13. REMOVAL AND ADJUSTMENT OF THE REEL BASE BLOCK ASSEMBLY

3-13-1. Removal of the Reel Base Block Assembly

❶ Turn the unit so that the top surface of the main body faces down.

❷ Remove the protector.

❸ Remove the four screws (BVTP3×8).

❹ Remove the reel base block assembly in the direction indicated by the arrow Ⓐ.

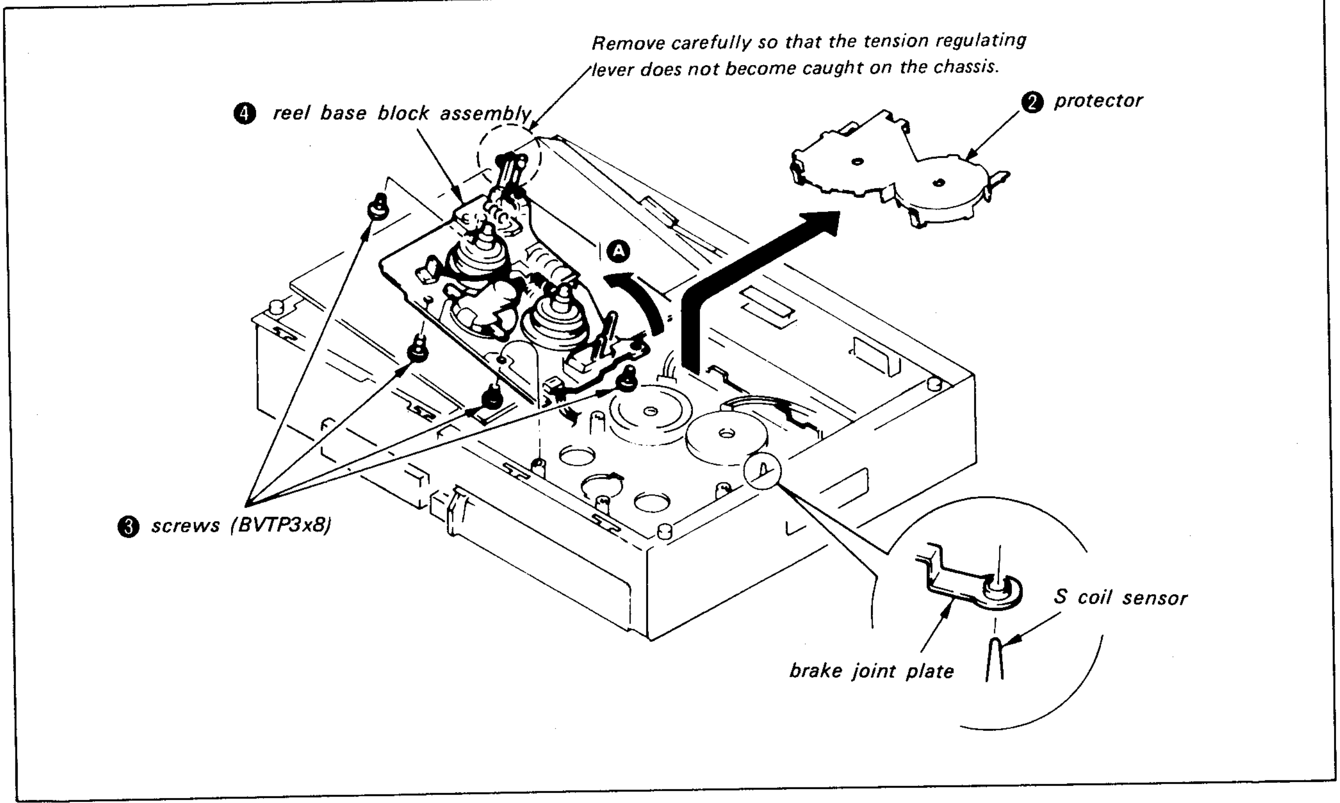

Remove carefully so that the tension regulating lever does not become caught on the chassis.
❹ reel base block assembly
❷ protector
Ⓐ
❸ screws (BVTP3x8)
S coil sensor
brake joint plate

Fig. 3-29. Removal of the reel base block assembly

3-13-2. Adjustment of the Position of the Tension Regulating Lever

[Method of adjustment]

1) Put the unit in playback mode.
2) Loosen the adjustment spring until the tape guide pin of the tension regulating lever assembly is positioned to the outside of the outer circumference of shuttle guide 1-YA, as shown in Fig. 3-30. Then adjust by moving the tension regulating band assembly in the direction of arrow Ⓐ.
3) After adjustment, tighten the adjustment screw, being careful that the tension regulating band assembly does not move.

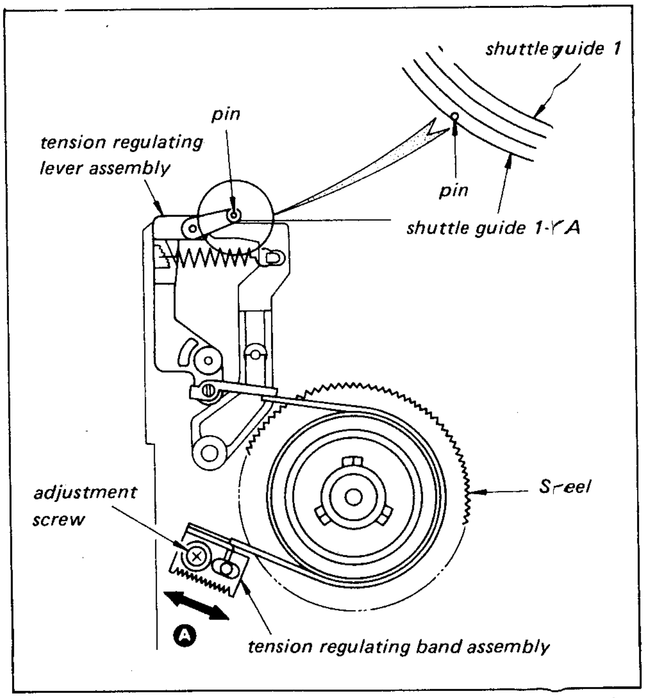

shuttle guide 1
pin
tension regulating lever assembly
pin
shuttle guide 1-YA
S reel
adjustment screw
Ⓐ
tension regulating band assembly

Fig. 3-30. Adjustment of the position of the tension regulating lever

3-14. ADJUSTMENT OF THE FORWARD AND BACK TENSION

[Method of measurement]

1) Insert the torque cassette (SL-0003C) and put the unit in playback mode.
2) Read the value on the meter on the S reel side after the needle has gone around about once.

   The correct value is 44 g·cm±4 g·cm.

Notes:

i) The set must be perfectly level during this measurement.

ii) After the measurement, the tape can become slack when the stop button is pressed. If this happens set the unit is forward mode to take up the slack before removing the tape.

[Method of adjustment]

Move the position of the tension coil spring that is hooked on the tension regulating lever assembly in the direction of arrow Ⓐ until the measured value falls within the correct range.

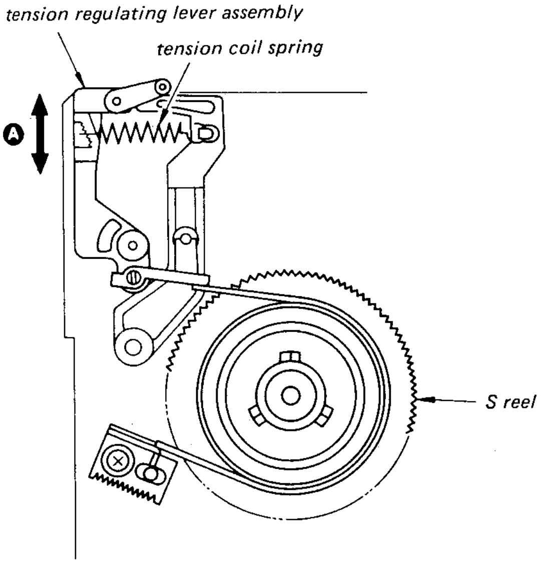


Fig. 3-31. Adjustment of the back tension

3-15. ADJUSTMENT OF THE FORWARD TORQUE

[Method of measurement]

1) Insert the torque cassette (SL-0003C) and start to record a telecast in βII mode.
2) Read the value on the meter on the T reel side after the needle has gone around about once. The correct range is 45 g·cm~90 g·cm.

[Method of adjustment]

1) Remove the front panel.
2) Turn potentiometer RV801 on TU-58 board to adjust the torque until its value falls within the correct range.

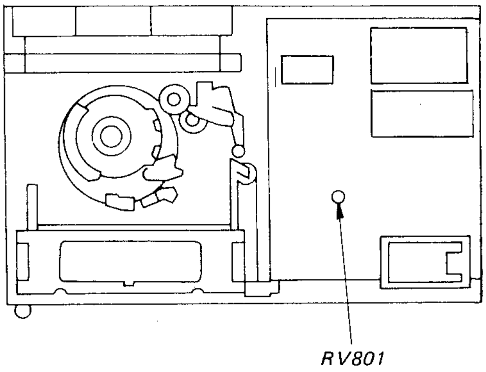


Fig. 3-32. Adjustment of the forward torque

Note:

When the forward torque is weakened during the measurement the tape can become slack, in which case the set will go into emergency stop mode. In such a case, the only switches that will work are the cassette eject switch and the power switch. It is necessary to temporarily remove the cassette, or to turn the power OFF and back ON.

4. TAPE PATH ADJUSTMENT

4-1. TRACKING ADJUSTMENT

This adjustment has a large effect on the picture quality in each mode and on the interchangeability of tapes, so it should be done carefully.

4-1-1. Preparation for adjustment
4-1-2. Adjustment on the entrance side
4-1-3. Adjustment on the exit side

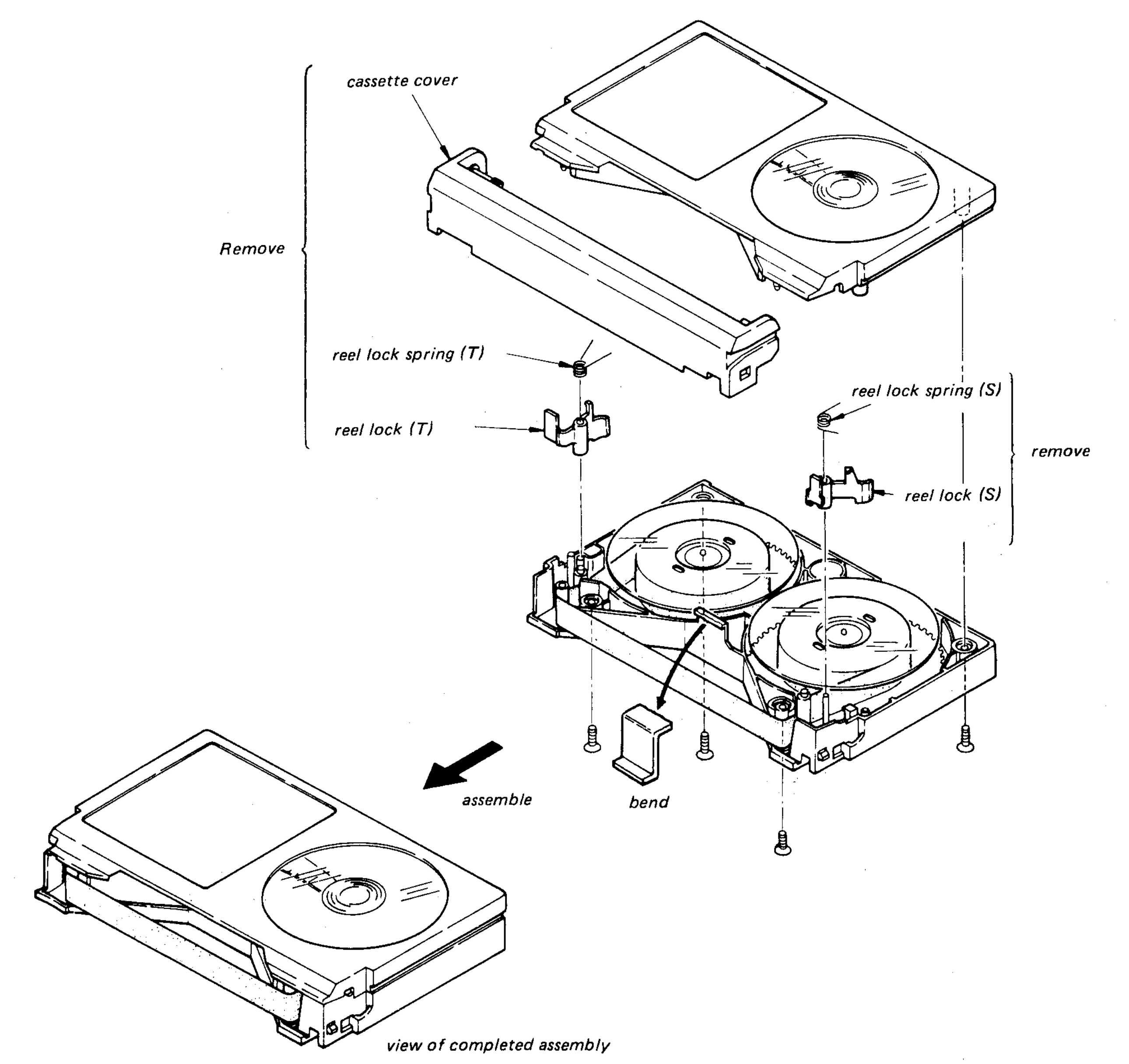
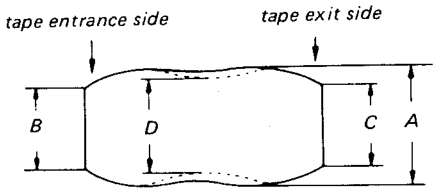

cassette cover
Remove
reel lock spring (T)
reel lock (T)
reel lock spring (S)
remove
reel lock (S)
assemble
bend
view of completed assembly

Fig. 4-1.

4-1-1. Preparation for Adjustment

1) Remove the cassette cover of the alignment tape in accordance with Fig. 4-1.
2) Clean the surface contacted by traveling tape (tape guide, drum tape trailing surface, capstan shaft, pich roller, AC, FE head surface) with a chamois cloth dipped in methanol.
3) Connect the oscilloscope as follows:
   channel 1: CN4-pin ③ (RP-28 board)
   external trigger: CN4-pin ① (RP-28 board)
4) Play back the 1 kHz signal on the traking section of the alignment tape.
5) Confirm that the oscilloscope radio frequency output waveform is flat and that the amplitude is a maximum. (Turn the tracking knob right and left to increase and decrease the amplitude while the waveform remains flat.) When the amplitude of the waveform is a maximum, confirm that the fluctuations and contact of the radio frequency output waveform meet the standards given in Fig. 4-2. If they do not, go through the procedure given in step 6).
6) If the entrance waveform cannot be made flat, as shown in Fig. 4-3 (a), by turning the tracking knob, go through the "entrance side adjustment" described in 4-1-2; if the exit waveform shown in Fig. 4-3 (b) cannot be made flat, go through the "exit side adjustment" in 4-1-3.


tape entrance side
tape exit side
B
D
C
A

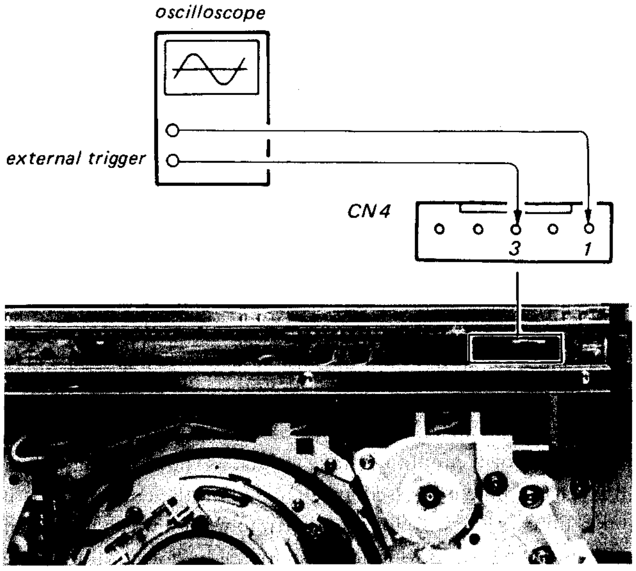
standards: *at the maximum of the tracking control knob*

contact: $\frac{B}{A} \geq 0.7$

$\frac{C}{A} \geq 0.7$

amount of fluctuation: $\frac{D}{A} \geq 0.9$

Fig. 4-2.


oscilloscope
external trigger
CN4
3
1

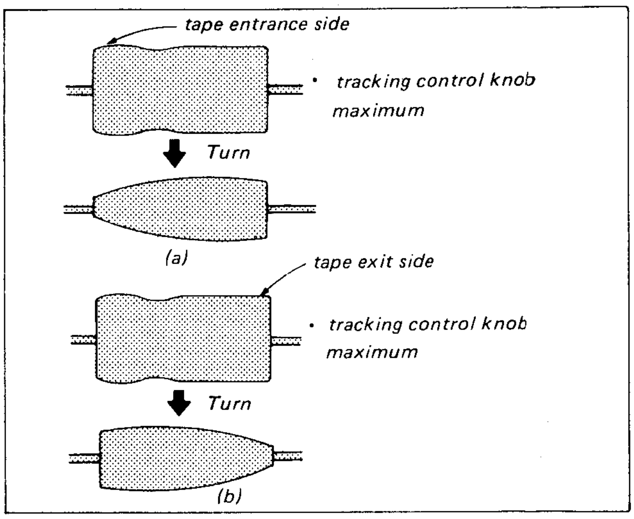

tape entrance side
• tracking control knob maximum
Turn
(a)
tape exit side
• tracking control knob maximum
Turn
(b)

Fig. 4-3.

4-1-2. Entrance Side Adjustment

Whenever the entrance side adjustment is performed, the exit side adjustment must also be performed. The various tape guides and adjustment positions are shown in Fig.4-5.

1) Turn the No.6 guide counterclockwise to free the movement of the tape as it enters the drum.
2) Turn the tracking control knob until the amplitude of the waveform is about 60% of its maximum.
3) Loosen No.5 guide lock screw ❶ and turn the No.5 guide until the entrance waveform sticks up a little above falt, as shown in the figure below. Then tighten the No.5 guide lock screw (Fig. 4-6).

   Note:

   After tightening No.5 guide lock screw ❶, confirm that it is as in the figure below.

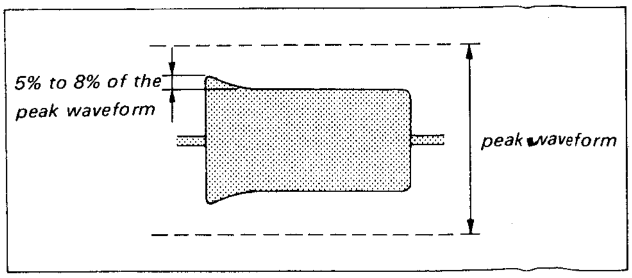

5% to 8% of the peak waveform
peak waveform

Fig. 4-4.

4) Next, lower the No. 6 guide until the waveform is flat.

5) Press the tape down between the No. 4 and No. 5 guide with a finger to lower the entrance side radio frequency waveform, then let go and confirm that the waveform returns to what it was before.

6) In this condition, check the clearance and curl of the No. 5 guide. If there are clearance and curl, adjust as explained in subsequent sections.

Note:

The tape tension between the No. 3, No. 4 and No. 5 guides must be balanced. If it is not, adjust the tilt of the No. 3 and No. 5 guides.

If the waveform cannot be made to look as shown in Fig. 4-4, or if when the tape is pressed and released on the entrance side it takes time for the waveform to return to what it was before, or if it does not return to what it was before, adjust according to the instructions given below.

[What to do when the waveform entrance output will not rise]

1) Check to see if the up-down tension between the No. 3, No. 4 and No. 5 guides is uniform. If it is not, adjust the tilt of the No. 3 and No. 5 guides.

   Note:

   The lower flange of the No. 4 guide must not protrude.

2) Raise the lower flange of the No. 4 guide to raise the entrance output.

   Note:

   It is sufficient to raise the lower flange of the No. 4 guide to 0.4 mm from its lowest position (within a rotation angle of 360°).

3) If the operation performed in step 2) fails to raise the waveform output, turn the No. 5 guide tilt adjustment screw slightly to the left, and the entrance output should rise.

[What to do when the waveform entrance output will not drop]

1) Remove the adjuting plate 3-1 of te No. 3 guide from the drum. Just before the lower tension of the tape becomes slack, tighten screw ❷.

2) If the tape is in contact with the lower flange of the No. 4 guide, lower the flange. If the tape is sticking up from the lower flange, adjust the tilt of the No. 5 guide so that the tape does not stick up from the lower flange of the No. 4 guide.

[What to do when there is a clearance in the No. 5 guide]

Turn the No. 4 guide counterclockwise to run the tape upward and eliminate the clearance in the No. 5 guide.

Note:

At this time make sure that a large curl is not produced below the No. 4 guide.

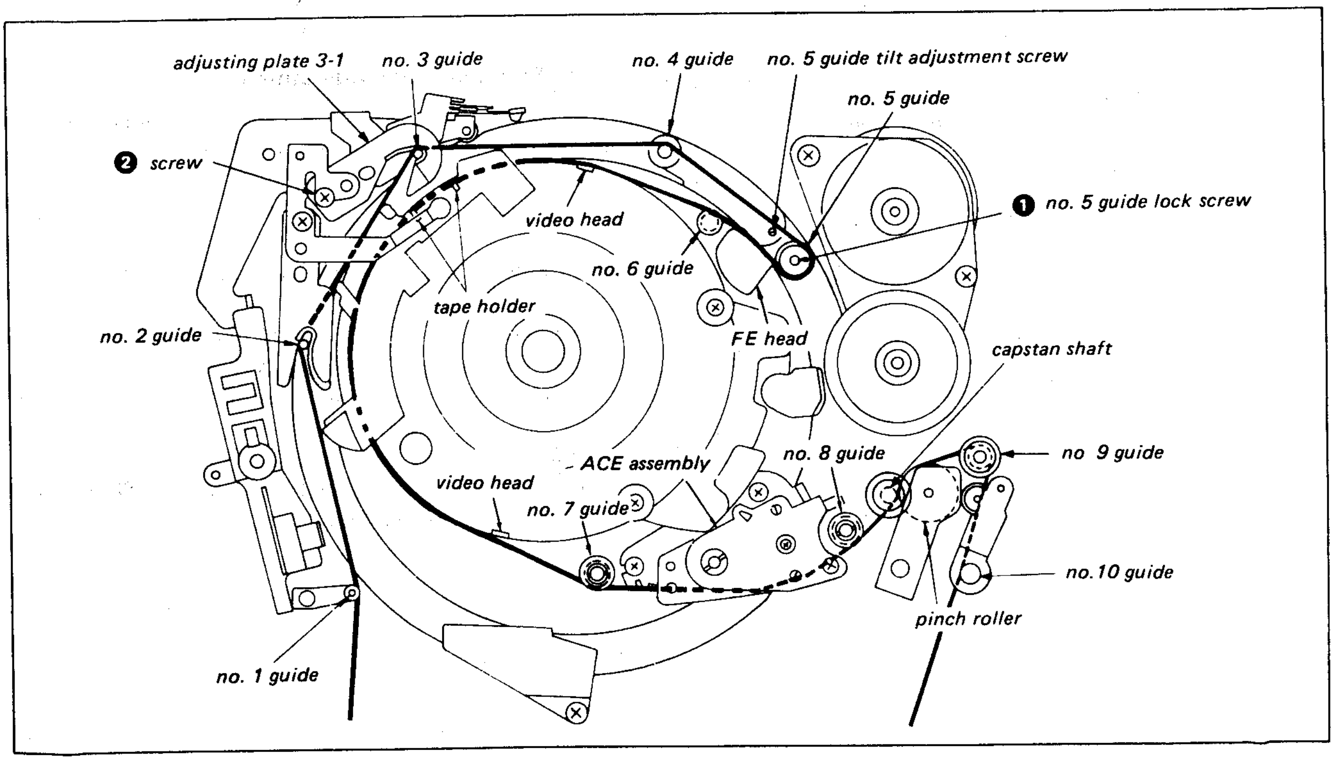
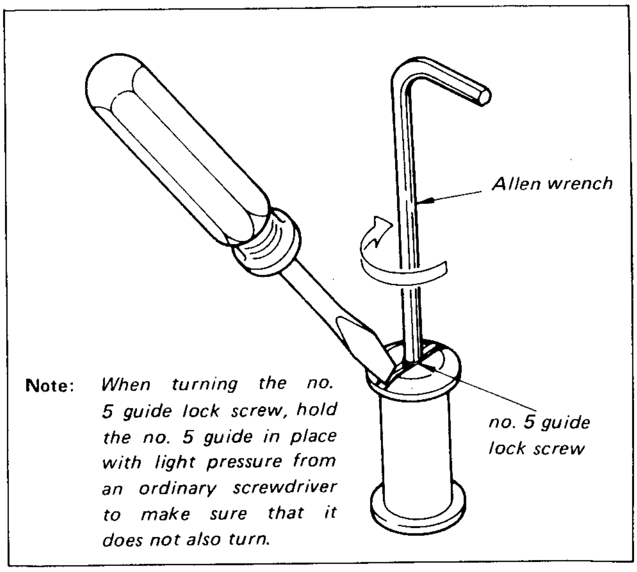

adjusting plate 3-1
no. 3 guide
no. 4 guide
no. 5 guide tilt adjustment screw
no. 5 guide
❷ screw
❶ no. 5 guide lock screw
video head
no. 6 guide
tape holder
no. 2 guide
FE head
capstan shaft
ACE assembly
no. 8 guide
no 9 guide
video head
no. 7 guide
no. 10 guide
pinch roller
no. 1 guide

Fig. 4-5. Tape guide layout diagram

[What to do when there is a curl]

1) When there is a gap below the No. 4 guide: Just before the lower tension on the tape becomes slack, move adjusting plate 3-1 of the No. 3 guide to the outside.
2) When there is not a gap below the No. 4 guide (when there is a curl below the No. 4 guide):
   i) Check to see if the No. 4 guide has been raised up too high. If it has been raised up too high, turn the adjusting plate clockwise to lower the No. 4 guide.
   ii) If the curl still has not been removed after i), tighten the No. 5 guide tilt adjustment screw in the clockwise direction until the curl is removed.



Note: *When turning the no. 5 guide lock screw, hold the no. 5 guide in place with light pressure from an ordinary screwdriver to make sure that it does not also turn.*

Fig. 4-6.

4-1-3. Exit Side Adjustment

1) connect the oscilloscope to the No. ③ terminal on connector CN4 (on RP-28 board). Connect the external trigger to the No. ① terminal on CN4.
2) Play the tracking section of the alignment tape. Adjust the tracking knob to reduce the amplitude of the radio frequency output waveform to 60% of its maximum level.
3) Watch the radio frequency output waveform when the No. 7 and No. 8 guides are raised (by turning the respective guide nuts counterclockwise) to let the tape run free. This waveform is called to exit free waveform.

   Note:

   Be careful not to raise the guides too far. They should be raised only about 0.3 to 0.5 mm, and the tape should not contact the lower flange of the AC head.

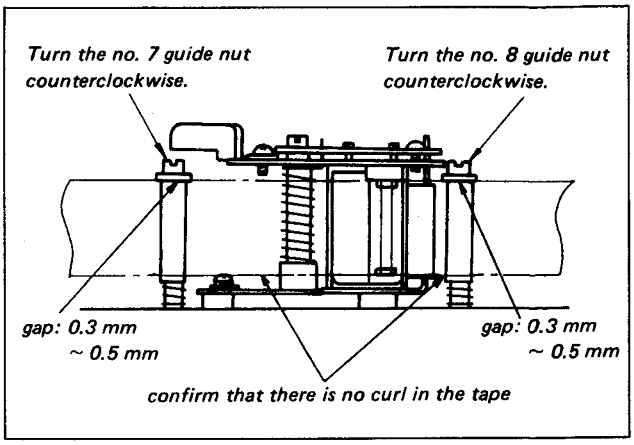

Turn the no. 7 guide nut counterclockwise.
Turn the no. 8 guide nut counterclockwise.
gap: 0.3 mm ~ 0.5 mm
gap: 0.3 mm ~ 0.5 mm
confirm that there is no curl in the tape

Fig. 4-7.

4) At this time, confirm that the exit free waveform is within the range shown in Fig. 4-8(a) and (b).
   - If it is outside of this range, adjust according to the procedure in 4-3.

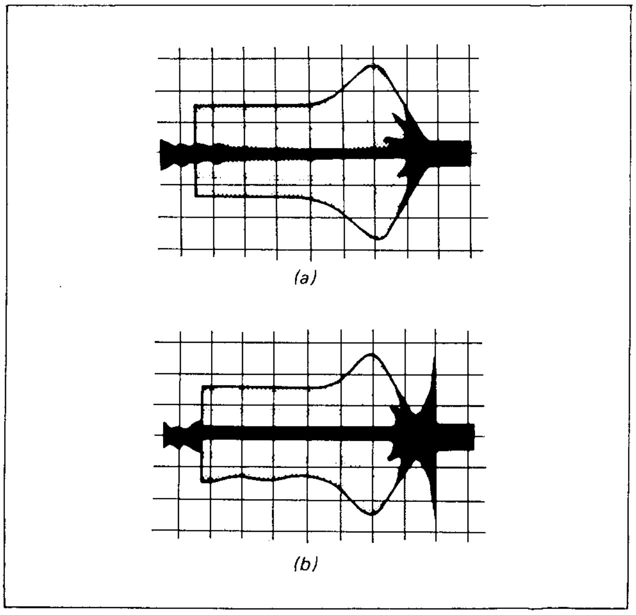


Fig. 4-8.

5) Turn the No. 7 guide nut clockwise until the waveform is flat.
6) Turn the No. 8 guide nut clockwise until the No 8 guide is lined up with the tape (just before the waveform starts to change lower the guide until there is no curl).
7) During playback, confirm that no curl occurs in the No. 7 guide or the No. 8 guide.
8) During rewind, confirm that no curl or clearance occurs in the No. 8 guide. If there is a curl or clearance, adjust using the No. 9 guide. After adjustment, lock the guide nut.

4-2. ADJUTMENTS AFTER REPLACEMENT OF THE AC ASSEMBLY

After removal or replacement of the AC assembly perform the adjustments listed below.

4-2-1. Exit side trackingd adjustment
4-2-2. CTL head (AC assembly)position adjustment
4-2-3. Audio head (AC assembly) azimuth adjustment
4-2-4. Audio head (AC assembly) height adjustment

4-2-1. Exit Side Tracking Adjustment

1) Set the parallel plate (SL-0657 in the list of fixtures and tools) up against the unit as shown in Fig. 4-9, and turn the tilt adjustment screw to adjust the audio head vertically.

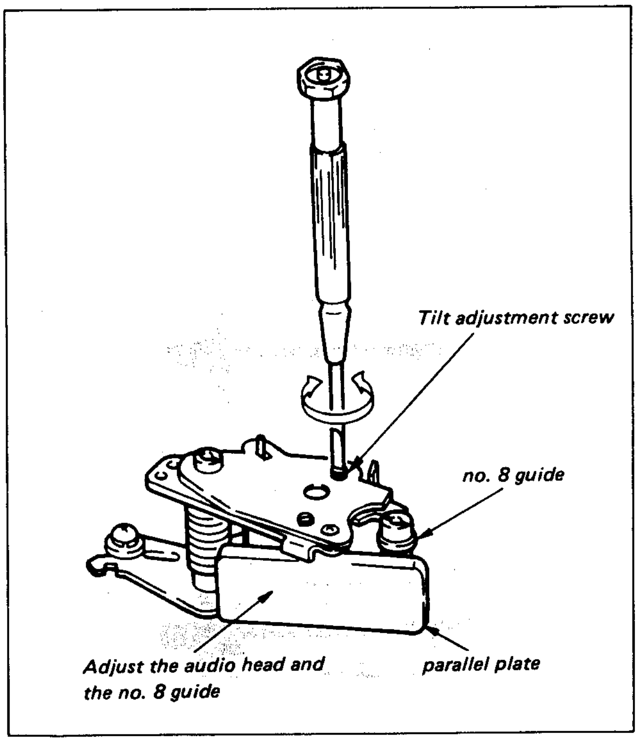

Tilt adjustment screw
no. 8 guide
Adjust the audio head and the no. 8 guide
parallel plate

Fig. 4-9.

2) Connect the oscilloscope to terminal ③ of connector CN4 (on RP-28 board).Connect the external trigger to terminal ① of CN4.

3) Play the tracking section of the alignment tape. Adjust the tracking knob until the radio frequency output waveform amplitude is reduced to about 60% of its maximum level. maximum level.

4) Raise the No. 7 and No. 8 guides (turn the respective guide nuts counterclockwise) and observe the radio frequency exit free waveform when the tape runs free.

Note:
Be careful not to raise the guide too far. Raise it about 0.3 to 0.5 mm, and be careful that the tape does not contact the lower flange of the AC head.

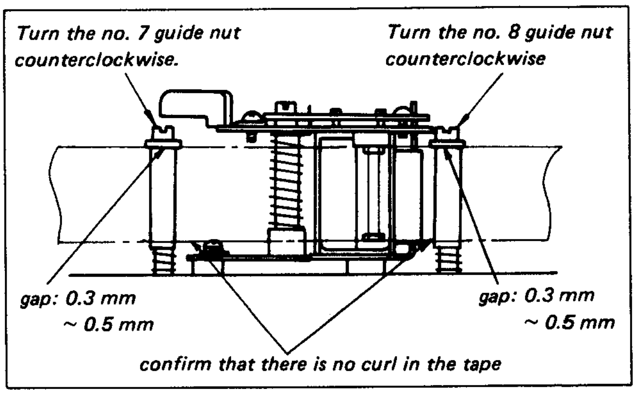
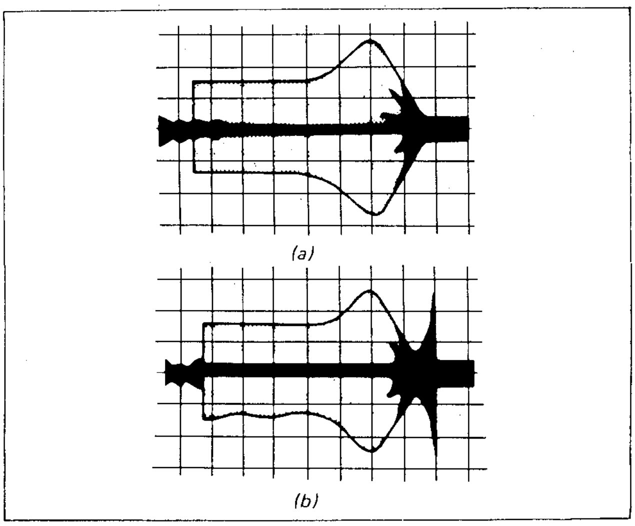

Turn the no. 7 guide nut counterclockwise.
Turn the no. 8 guide nut counterclockwise
gap: 0.3 mm ~ 0.5 mm
gap: 0.3 mm ~ 0.5 mm
confirm that there is no curl in the tape

Fig. 4-10.

5) At this time, confirm that the exit free waveform is within the range shown in Fig. 4-11(a) and (b).



(a)

(b)

Fig. 4-11.

[When the waveform is outside this range]

- When the waveform is outside this range and has the form shown in Fig.4-12. turn the tilt adjutment screw clokwise to adjust until the waveform is whthin the required range.

Note:
Complete the adjustment by turning the adjustment screw in the direction of tightening (clockwise).

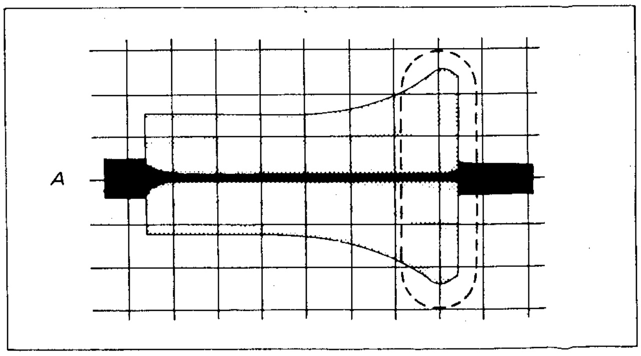


Fig. 4-12.

- When the exit free waveform is outside of the required range and has the form shown in Fig. 4-13, turn the tilt adjustment screw counterclockwise to produce waveform A (Fig. 4-12), then turn it clockwise to bring the waveform within the required range.

  Note:

  Finish the adjustment by turning the adjustment screw in the direction of tightening (clockwise).

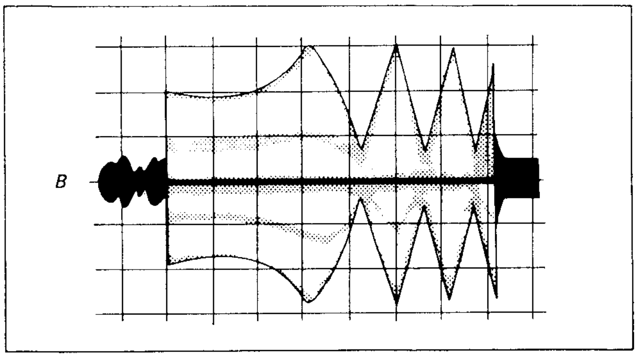
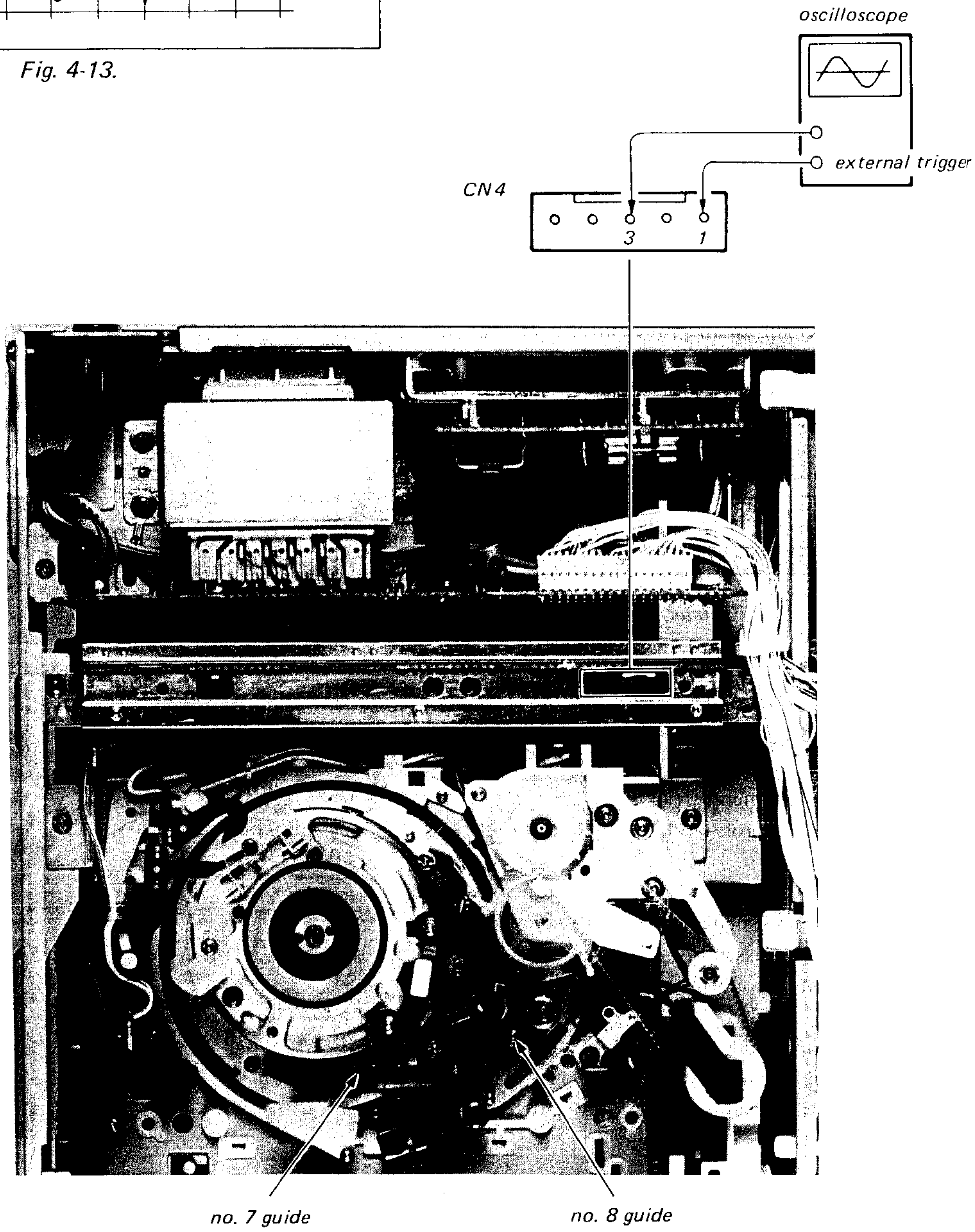


Fig. 4-13.

6) Turn the No. 7 guide nut clockwise to flatten the waveform.
7) Turn the No. 8 guide nut clockwise to line the No. 8 guide up with the tape (lower it so that there is no curl just before the waveform starts to change).
8) If the radio frequency waveform is as shown in Fig. 4-12 on the exit side, repeat the adjustment.

[Adjustment point]

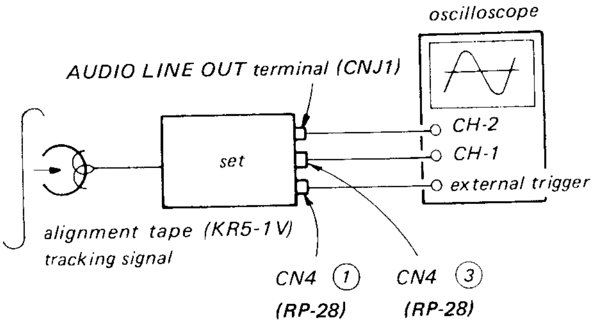


4-2-2. CTL Head (AC Assembly) Position Adjustment

This adjustment includes the mechanical CTL head mounting position adjustment and the electrical tracking control center adjustment. The tracking control center adjustment is to be performed first, followed by the mechanical adjustment of the head mounting position.

[Connections]

1) Playback


oscilloscope
AUDIO LINE OUT terminal (CNJ1)
set
CH-2
CH-1
external trigger
alignment tape (KR5-1V)
tracking signal
CN4 ①
(RP-28)
CN4 ③
(RP-28)

[Method of adjustment]

1) Play the tracking signal section of the alignment tape.
2) Turn the tracking control knob clockwise or counterclockwise to the center click position. Confirm that the amplitude of the radio frequency output signal is at its maximum level. Also confirm that the audio signal 0 level position occurs at the location of the channel B waveform. If the necessary standards are not met follow the procedure in 3).

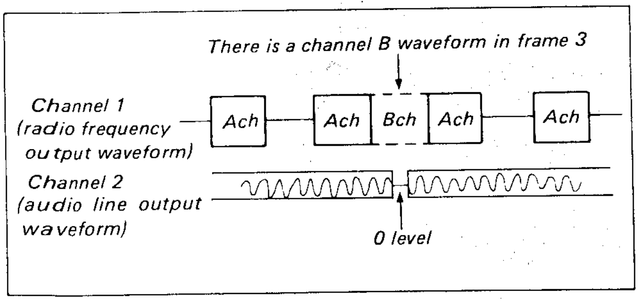

There is a channel B waveform in frame 3
Channel 1 (radio frequency output waveform)
Ach
Ach
Bch
Ach
Ach
Channel 2 (audio line output waveform)
0 level

Fig. 4-14.

3) Tracking center adjustment
   Refer to electrical adjustment 2 in section 5-3-3.
4) CTL head position adjustment
   a. Set the tracking control knob at the center click position.
   b. Loosen the 2 AC assembly position adjustment screws, then use a tool such as an ordinary screwdriver to slide the AC assembly to where the radio frequency output waveform amplitude becomes a maximum.
   c. Play the color bar signal on the alignment tape and check the picture quality.
   d. Tighten the position adjustment screws, then lock them.

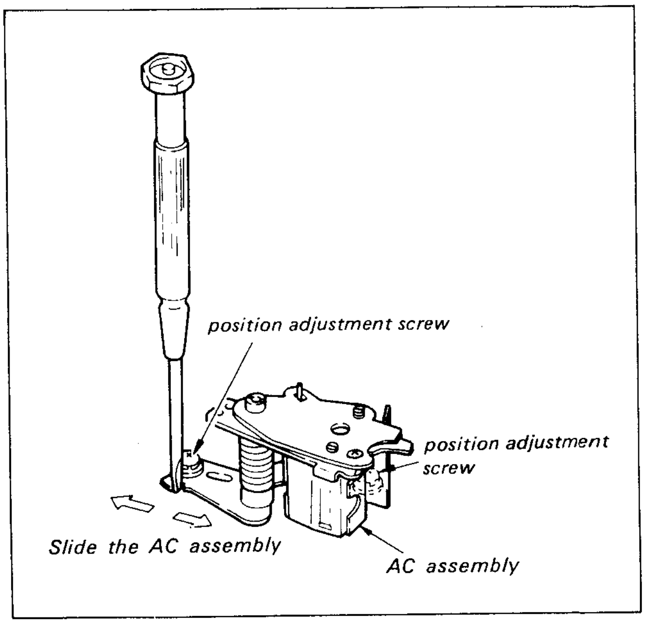
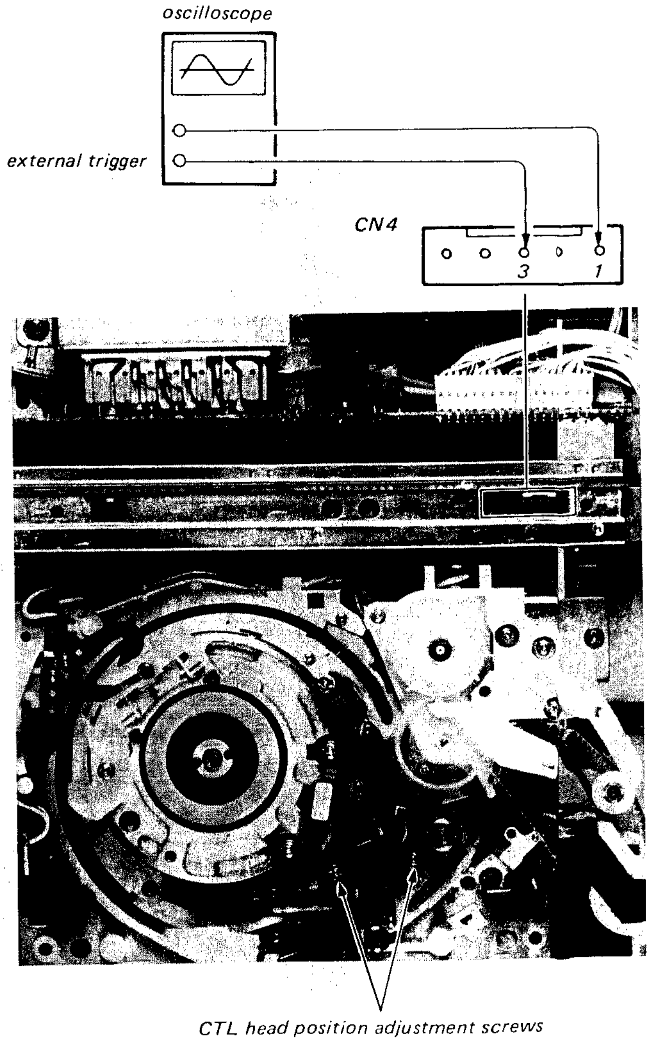

position adjustment screw
position adjustment screw
Slide the AC assembly
AC assembly

Fig. 4-15.

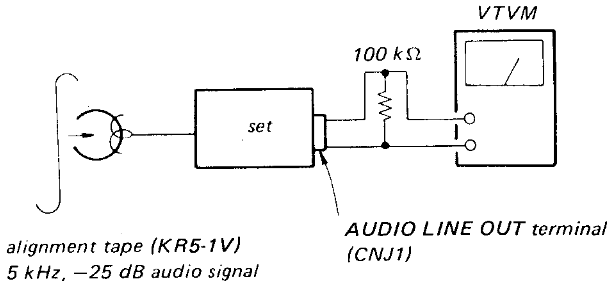
[Adjustment point]


oscilloscope
external trigger
CN4
3
1
CTL head position adjustment screws

4-2-3. Audio head (AC Assembly) Azimuth Adjutment

[Connections]

1) Playback


VTVM
100 kΩ
set
alignment tape (KR5-1V)
5 kHz, −25 dB audio signal
AUDIO LINE OUT terminal
(CNJ1)

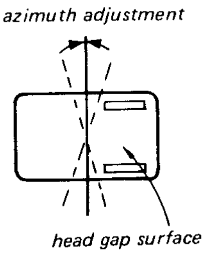
[Method of adjustment]

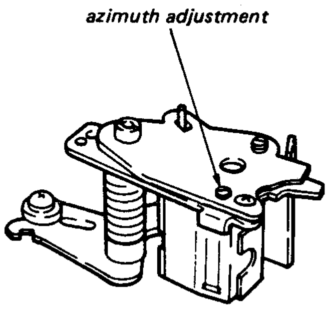
1) Play the 5kHz, −25dB audio signal section (RF sweep section) of the alignment tape.
2) Adjust the azimuth adjustment screw until the output level (VTVM indication) is a maximum.

   Note:

   Complete the adjustment by turning the adjustment screw in the direction of tightening (clockwise).
3) After adjustment, lock the adjustment screw.

[Adjustment point]


azimuth adjustment
head gap surface


azimuth adjustment

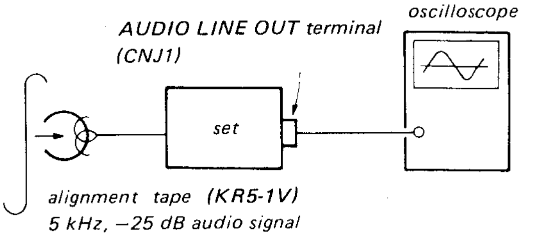
4-2-4. Audio Head (AC Assembly) Height Adjustment

[Condition]

This adjustment must only be performed after the exit side tracking adjustment has been completed.

[Connections]

1) Playback


oscilloscope
AUDIO LINE OUT terminal
(CNJ1)
set
alignment tape (KR5-1V)
5 kHz, −25 dB audio signal

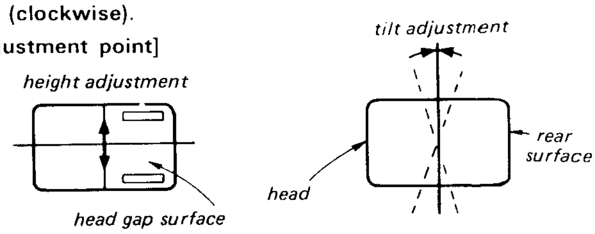
[Method of adjustment]

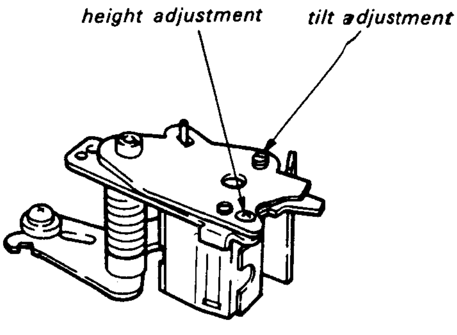
1) Play the 5kHz, −25dB audio signal section(RF sweep section) of the alignment tape.
2) Adjust the height adjustment screw and the tilt adjustment screw so that the amplitude of the audio line output waveform (5 kHz) becomes a maximum.

   Note:

   Both of these adjustment screws must be turned in the same direction and through the same angle, and not more than ±30°. Complete the adjustment by turning the adjustment screws in the direction of tightening (clockwise).

[Adjustment point]


height adjustment
head gap surface
tilt adjustment
rear surface
head


height adjustment
tilt adjustment

4-3. HOW TO INSPECT THE TAPE TRAVELING WHEN ADJUSTING THE TAPE PATH

Adjust and check the tape path using the alignment tape following the adjustment guide, then check the tape travel using the procedure below.

1) Get one L-830 reel ready (these are widely available commercially). Remove the cassette cover referring to Fig. 4-1 of the adjustment guide.
2) Run the L-830 tape in playback mode and check the following points.
   i) Entrance side
      Confirm that the tape does not contact the upper flange of the No. 4 guide or the No. 6 guide, and is not damaged. (Some tape curl is allowed but the tape must not be creased.) (Fig. 4-16)
   ii) Exit side
      Confirm that the tape does not contact the upper flange of the No. 7 guide or the No. 8 guide, or the upper or lower flange of the No. 10 guide, and is not scratched. (Some tape curl is allowed but the tape must not be creased.) (Fig. 4-17)
   iii) If the tape was found to not be running correctly in step ii), readjust the tape path using the alignment tape, following the adjustment guide.
      If the tape is not running correctly on the entrance side, refer to section 4-1-2 of the adjustment guide.
      If the tape is not running correctly on the exit side, refer to section 4-1-3 of the adjustment guide.

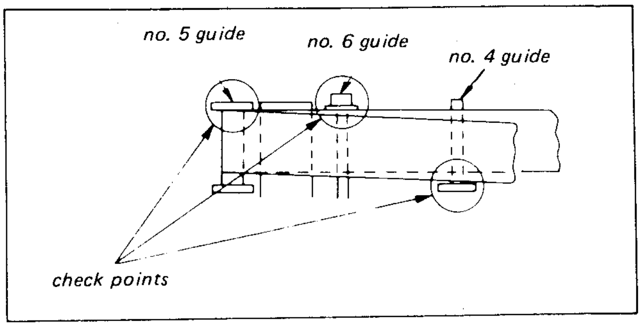


Fig. 4-16

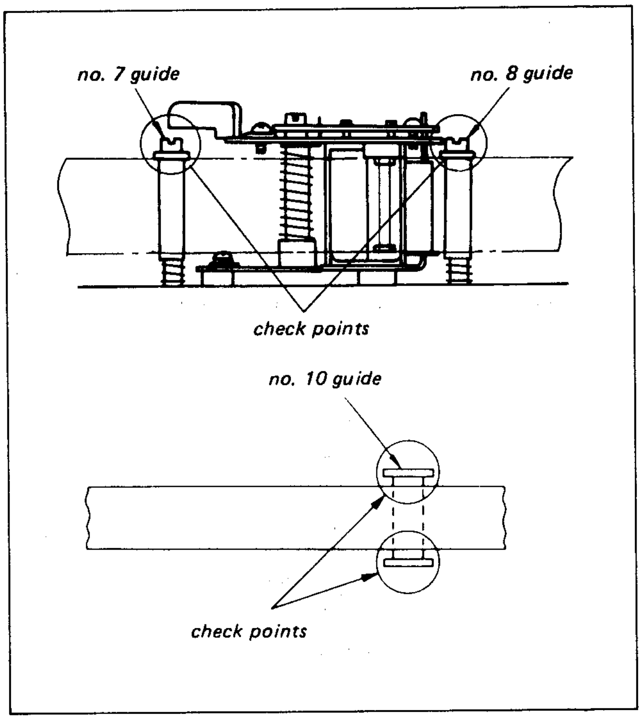


Fig. 4-17.

5. ELECTRICAL ALIGNMENT

This section provides all necessary information and instructions for complete alignment of the elctronic circuits in this machine.

EQUIPMENT REQUIRED

(1) Color TV receiver
(2) Oscilloscope Dual-trace, Bandwidth more than 15 MHz with delay mode
(3) Frequency counter (more than four digits)
(4) NTSC pattern generator
(5) Digital voltmeter (10MΩ/V)
(6) VOM (20kΩ/V)
(7) Audio generator
(8) Level meter
(9) Distortion meter
(10) Spectrum analyzer
(11) Alignment tape Type KR5-1V Code No. 8-969-995-92
(12) Alignment tool (adjusting screwdriver for semi-fixed resistor coil) Code No. 7-700-733-01

[Preparatory Set-up for Alignment]

For these alignment procedures involving use of a video input signal the NTSC pattern generator is to be connected to the VHF antenna terminals of the SL-HF600. This RF signal is processed by the tuner and I.F. circuits within the VTR. It is important that the video out signal from the I.F. circuit satisfies the specifications. The video signal must be checked with an oscilloscope connected to pin⑧of IC601 on the VI-11 board. Check that the video signals are flat when the amplitude of the horizontal sync signal is about 0.3V, the amplitude of the video portion is about 0.7V, and the amplitude of the burst signal is about 0.3V.
The video signal (color-bar signal) used in this alignment is shown in Fig. 5-1.

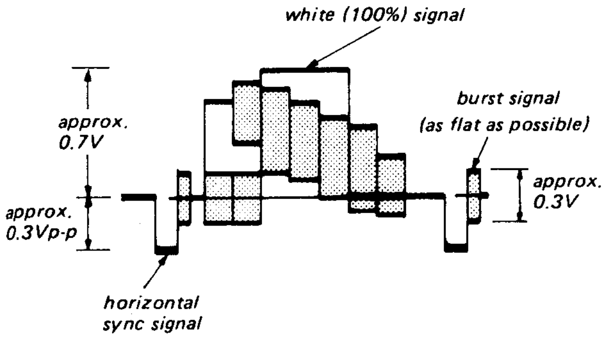

white (100%) signal
approx. 0.7V
burst signal (as flat as possible)
approx. 0.3V
approx. 0.3Vp-p
horizontal sync signal

Fig. 5-1. Color-bar signal of pattern generator

[Alignment Tape]

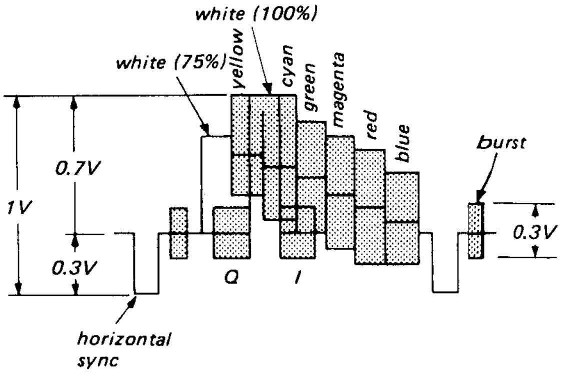
KR5-1V

Tape speed	Video signal	Audio signal	Playing time
20.0mm/ sec. (βII)	Color bars	3 kHz −5dB	4 min. for each segment
	Monoscope	333Hz −30 dB	
	RF sweep	5kHz −30dB	
	Tracking	1kHz −10 dB	
	Color bars	Beta hifi 400 Hz ±25kHz DEV	
13.3mm/ sec. (βIII)	Monoscope	5 kHz −30dB	
	Color bars	3 kHz −10dB	

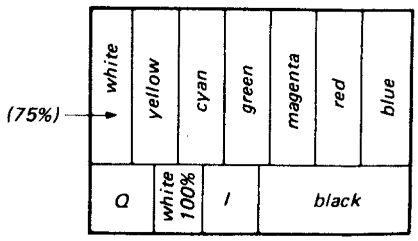
[Color Bar Signal]

The 75% color bar signal recorded on the alignment tape is shown in Fig. 5-2.

Note: Measure at IC601 ⑧ on the VI-11 board.


white (100%)
white (75%)
yellow
cyan
green
magenta
red
blue
burst
0.7V
1V
0.3V
0.3V
Q
I
horizontal sync

color bar signal waveform


(75%)
white
yellow
cyan
green
magenta
red
blue
Q
white 100%
I
black

color bar pattern

Fig. 5-2. Color-bar signal of alignment tape

[VR Alignment Tool Screwdriver]

Use the tool screwdriver supplied for alignment of semi-fixed VRs and inductances on each printed circuit board. An ordinary screwdriver is too large and is difficult to use when adjusting VRs from the print pattern side of a board. The special alignment tool screwdriver is shown in Fig. 5-3.

The metal blade of the screwdriver is used for variable resistors and trimmer capacitors.

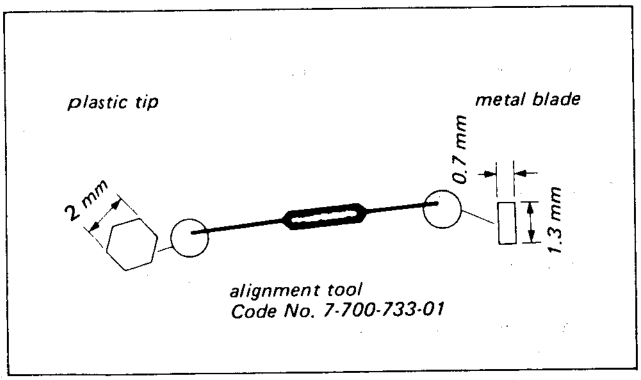

plastic tip
metal blade
2 mm
0.7 mm
1.3 mm
alignment tool
Code No. 7-700-733-01

Fig. 5-3. Alignment tool screwdriver

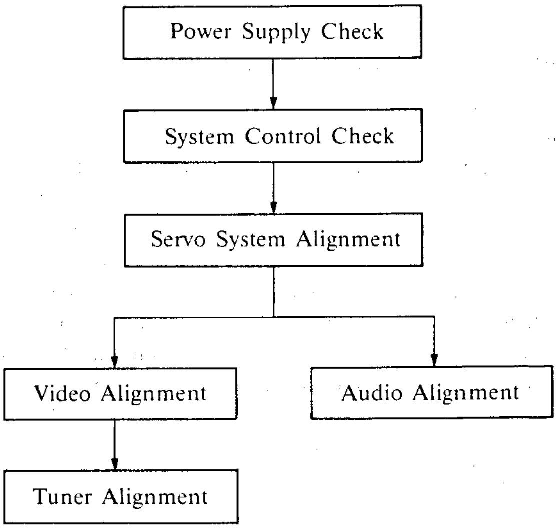
[Required Levels and Impedances of Input and Output]

Inputs and outputs

Video input	Phono jack (1) 1 Vp-p ±0.5 Vp-p, 75 ohms, unbalanced, sync negative
Video output	Phono jack (1) 1 Vp-p ±0.5 Vp-p, 75 ohms, unbalanced, sync negative
Audio input	Phono jacks (2) −10 dBs (0 dBs = 0.775V rms), more than 47 k ohms
Audio onput	Phono jacks (2) −10 dBs (at load impedance 47k ohms) More than 10k ohms

[Alignment Sequence]

The alignment should be performed following the sequence below.


Power Supply Check
System Control Check
Servo System Alignment
Video Alignment
Audio Alignment
Tuner Alignment

5-1. POWER SUPPLY CHECK (PS-39 Board)

Measure in E-E mode (power supply switch ON).

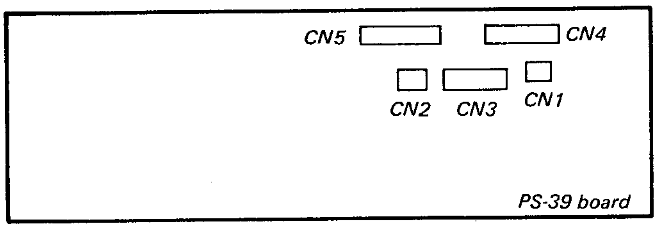


Fig. 5-4. Component layout

1. Switched 12V Check
   Pin 7 of CN4 shall be 12.0 ± 0.3V.
2. Switched 9 V Check
   Pin 5 of CN4 shall be 9.0 ± 0.2V.
3. Unswitched 5.5V Check
   Pin 3 of CN4 shall be 5.5 ± 0.2V.
4. Unswitched 45V Check
   Pin 5 of CN3 shall be 45 ± 5V.
5. Unswitched −20V Check
   Pin 5 of CN5 shall be −20 ± 3V.
6. Unswitched −30 V Check
   Pin 2 of CN4 shall be −30 ± 2.8V.
7. AC 4.2 V Check
   Pin 7, 8 of CN5 shall be AC4.2 ± 0.3V.

5-2. SYSTEM CONTROL CHECK (SS-32 Board)

5-2-1. Clock Frequency Check

Mode: E-E
Signal: None
Frequency counter: Pin (59) of IC1
Check: Within 6.0 MHz ± 0.1 MHz

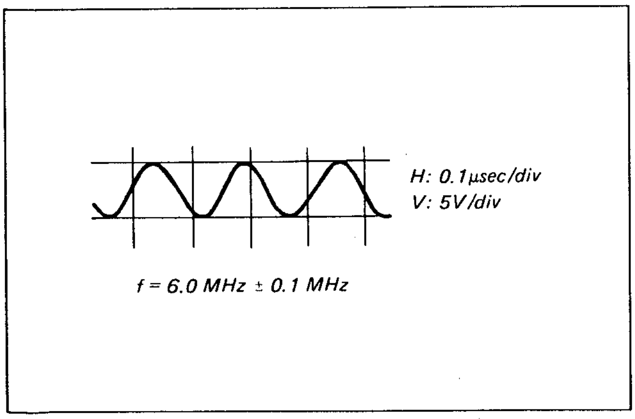


Fig. 5-5. Clock frequency

5-3. SERVO SYSTEM ALIGNMENT

Alignment Sequence

5-3-1. Reel motor control system adjustment
5-3-2. Drum servo system alignment
5-3-3. Capstan servo system alignment

5-3-1. Reel Motor Control System Alignment

1. FWD Torque Alignment (SS-32 board)

See "Mechanical Adjustment"

5-3-2. Drum Servo System Alignment

1. Voltage Check

(1) Pin ㉚ of IC501 shall be 5.7 ± 0.3V
(2) Pin ⑩ of IC501 shall be 3.4 ± 0.3V

2. Clock Check

(1) Pin ㉘ of IC501 shall be above 0.3 Vp-p

3. Drum Free Speed Adjustment (SS-32 board)

Mode: Playback
Signal: Alignment tape βII color bar, or monoscope
Oscilloscope: CH-1 Pin ⑬ of IC501 (TP501)
CH-2 Pin ㊴ of IC501 (TP505)

Alignment method:
Adjust to 547 μsec with RV503 (See Fig. 5-6)

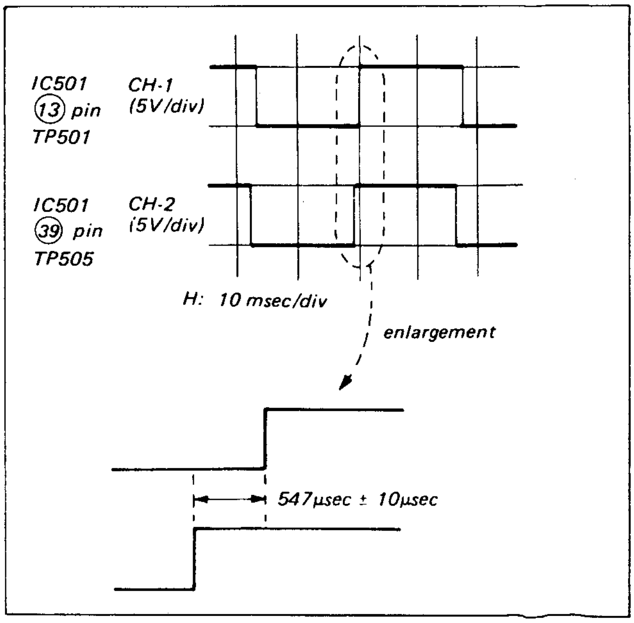
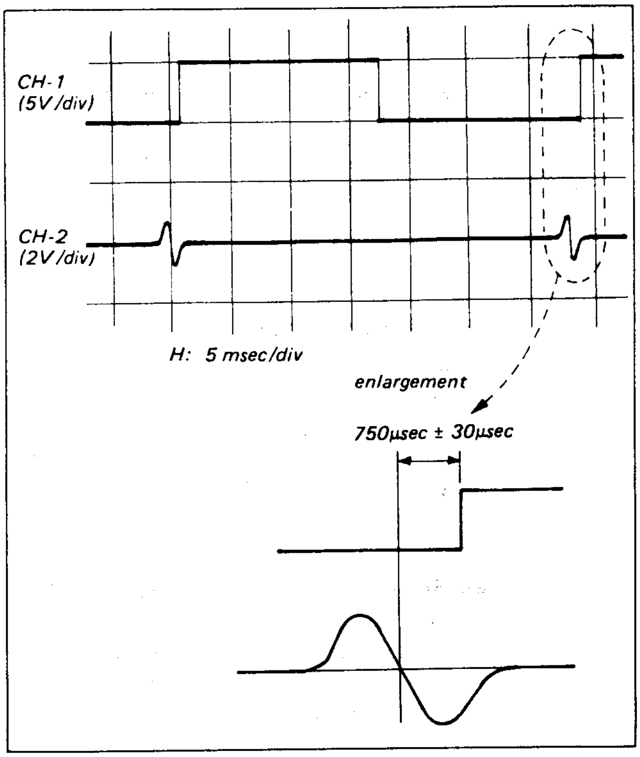


Fig. 5-6. Drum free speed adjustment

4. RF Switching Position Adjustment (SS-32 board)

Mode: Playback
Signal: Alignment tape βII color bar or monoscope
Oscilloscope: CH-1 TP505 (pin ㊴ of IC501)
CH-2 Pin ㊵ of IC501

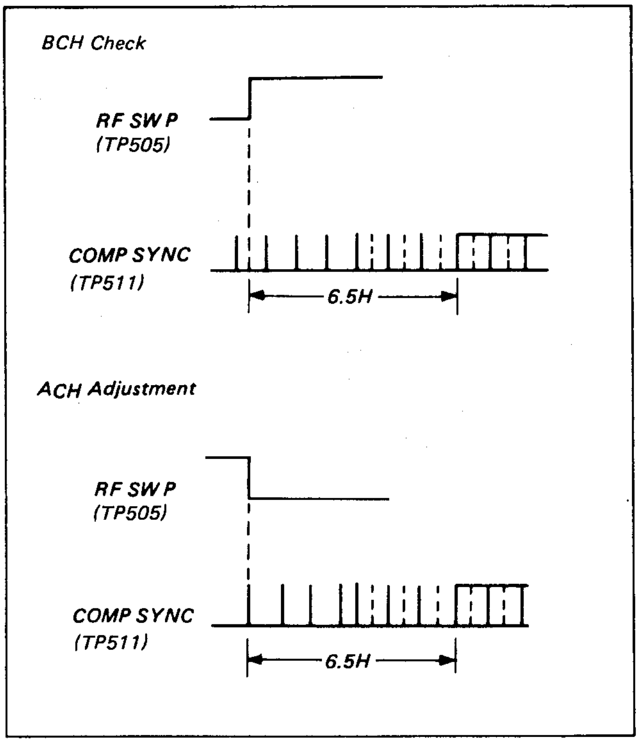


CH-1
(5V/div)
CH-2
(2V/div)
H: 5 msec/div
enlargement
750μsec ± 30μsec

Fig. 5-7. RF switching position adjustment (1)

Adjustment method:

(1) Adjust to 750 μsec ± 30 μsec with RV502. (See Fig. 5-7)
(2) Change connection of CH-2 only to TP511.
(3) Mode: Recording
(4) Confirm that the Lock Phase of RF SW P (BCH) is 6.5H.
(5) Adjust RV501 so that the Lock Phase of RF SW P (ACH) is 6.5H. (See Fig. 5-8)

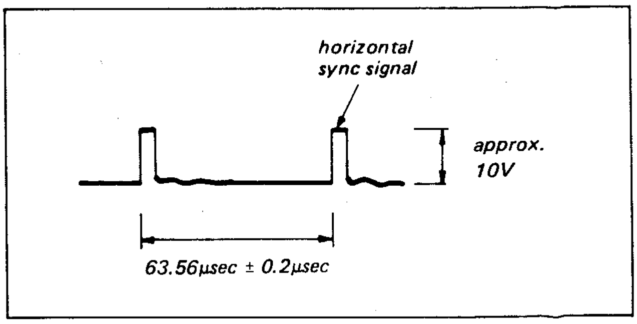


BCH Check
RF SW P
(TP505)
COMP SYNC
(TP511)
6.5H
ACH Adjustment
RF SW P
(TP505)
COMP SYNC
(TP511)
6.5H

Fig. 5-8. RF switching position adjustment

5. BETA Scan, Drum Free Speed Adjustment (SS-32 board)

Mode: BETA scan
Signal: Alignment tape βIII color bar or monoscope
Oscilloscope: TP511
Adjustment method:
Adjust to 63.56 μsec ± 0.2 μsec with RV507 (See Fig. 5-9).



horizontal
sync signal
approx.
10V
63.56μsec ± 0.2μsec

Fig. 5-9. Drum free speed adjustment

5-3-3. Capstan Servo System Alignment

1. Capstan DC Bias Adjustment (SS-32 board)

Mode: Playback

Signal: Color bar from alignment tape βI, βII, βIII or monoscope

Oscilloscope: Pin ⑳ of IC501 (TP504)

Adjustment method:

Adjust to the relevant duty (ratio for A and B) in the play mode with the RV as shown in Table 5-1.

Playback Mode	Adjustment RV	Duty
βIII	RV504	50% ±5%
βII	RV505	50% ±5%
βI	RV506	50% ±5%

Table 5-1.

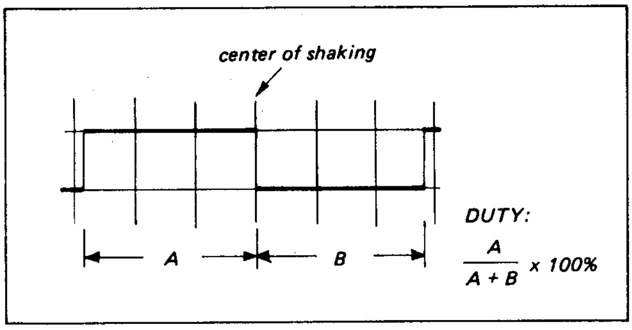

center of shaking
A
B
DUTY:
A / (A + B) x 100%

Fig. 5-10. Capstan DC bias adjustment

2. Tracking Center Adjustment (SS-32 board)

Mode: Playback

Signal: Alignment tape βII or βIII color bar or monoscope

Oscilloscope: CH-1 Pin ⑬ of IC501 (TP501)
CH-2 Pin ⑮ of IC501 (TP510)

Adjustment method:

(1) Set the TRACKING knob to the center click position.

(2) Adjust to 860 μsec ± 50 μsec with RV508. (See Fig. 5-11)

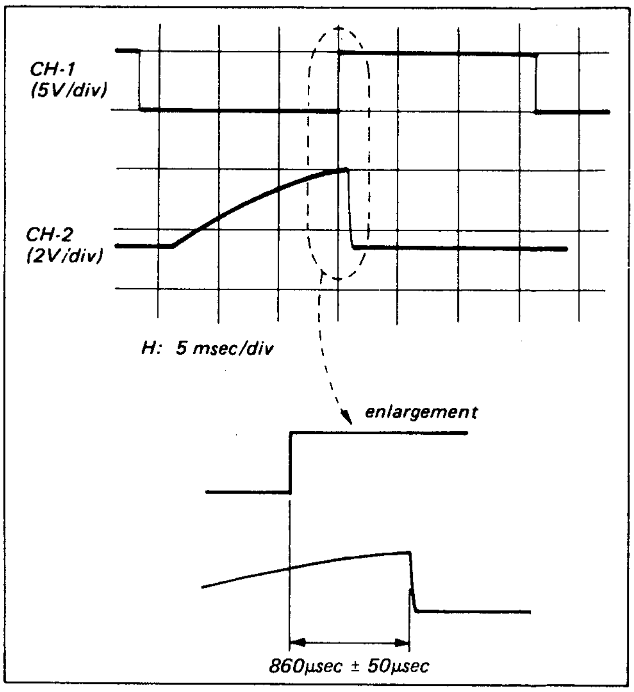

CH-1
(5V/div)
CH-2
(2V/div)
H: 5 msec/div
enlargement
860μsec ± 50μsec

Fig. 5-11. Tracking center adjustment

5-4. VIDEO SYSTEM ALIGNMENT

As a rule, first the playback system is aligned with an alignment tape to check that it operates normally, then the recording system is aligned.

The alignment sequence is shown below. The Y signal and chroma signal systems are aligned for both playback and recording systems.

Color video signals supplied by the pattern generator is used for video system alignment in the record mode. Check that the sync and color burst signals conform to the specifications designated in "Preparatory Set-up for Alignment" in Fig. 5-1.

5-4-1. [Playback system alignment]
1. Playback amplifier frequency response adjustment
2. De-emphasis level adjustment
3. Playback Y signal level adjustment

5-4-2. [Record system alignment]
1. VCO frequency alignment and VCO lock check
2. Comb filter adjustment
3. Comb AGC adjustment
4. Sync AGC adjustment
5. Y-FM carrier adjustment
6. FM modulator deviation adjustment
7. White clip and dark clip adjustment
8. Y-FM record current adjustment
9. fsc adjustment
10. Carrier balance adjustment
11. Chroma record current adjustment

5-4-3. [JOG motion playback system alignment]
1. Skew frequency adjustment
2. JOG AGC adjustment
3. Output level adjustment when pause mode

5-4-1. Playback System Alignment

1. Playback Amplifier Frequency Response Adjustment (RP-28 board)

- Adjust both A- and B-ch.
- B-ch is indicated by ( ).

Mode: Playback
Signal: Alignment tape II RF sweep
Oscilloscope: Pin③of CN4
External trigger: Pin①of CN4
Adjustment method:
(1) Increase the output level to maximum with the TRACKING knob.
(2) Set the trigger slope to − (+).
(3) Adjust RV3 (RV2) on RP-28 board so that 5.1 MHz becomes 90% (−1dB) against 3.58 MHz.

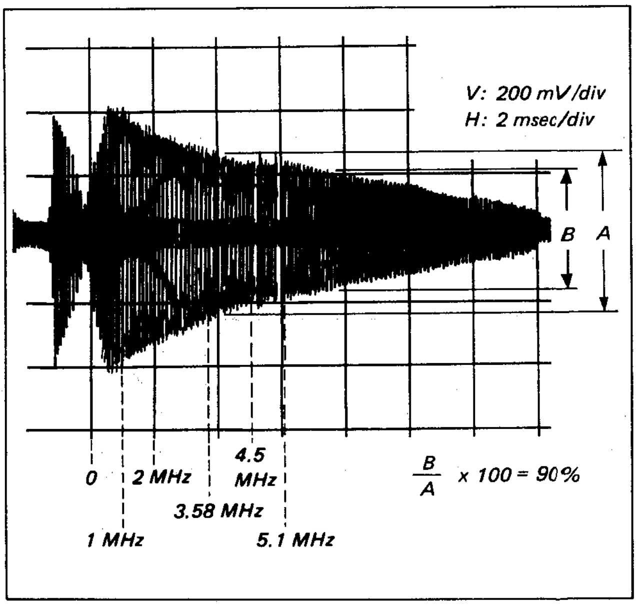


Fig. 5-12. Playback amplifier frequency response adjustment

2. De-emphasis Level Adjustment (VI-11 board)

Mode: Playback
Signal: Alignment tape βII color bar
Oscilloscope: Emitter of Q235
Adjustment method:
Adjust to 1.3V ± 0.05 Vp-p with RV231. (See Fig. 5-13)

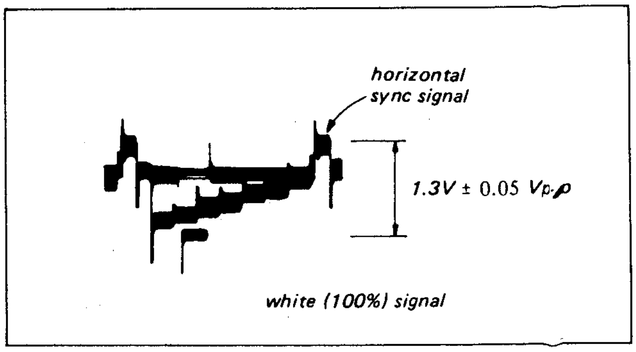


Fig. 5-13. De-emphasis level adjustment

3. Playback Y Signal Level Adjustment (VI-11 board)

Mode: Playback

Signal: Alignment tape βII color bar

Oscilloscope: Pin③of CN5

Adjustment method:

Adjust to 1.0V ± 0.05 Vp-p with RV230.

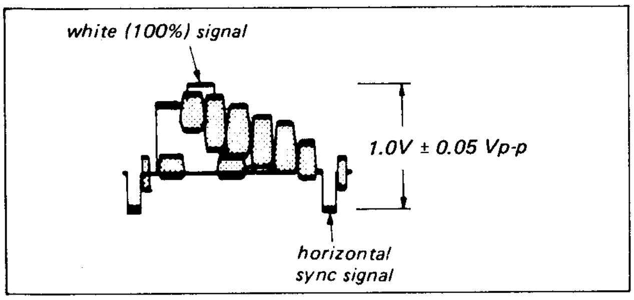

white (100%) signal
1.0V ± 0.05 Vp-p
horizontal sync signal

Fig. 5-14. Playback Y signal level adjustment

5-4-2. Record System Alignment

1. VCO Frequency Alignment and VCO Lock Check (VI-11 board)

Mode: Record or E-E

Signal: Color bar

Frequency counter: Pin ㉝ of IC401

Digital Voltmeter: Pin ㉖ of IC401

Adjustment method:

Adjust to 4.4V ± 0.05 Vdc with RV403.

Note: The frequency also changes when RV403 is turned.
Verify that the frequency is locked to f = 4.27 MHz.
Be sure to use digital voltmeter to measure voltage.

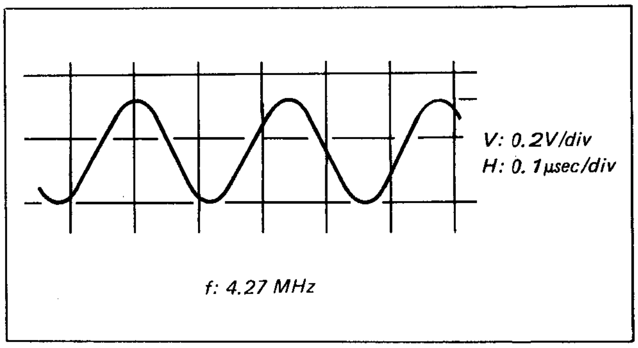

V: 0.2V/div
H: 0.1μsec/div
f: 4.27 MHz

Fig. 5-15. VCO frequency alignment and VCO lock check

2. Comb Filter Adjustment (VI-11 board)

Mode: Record or E-E

Signal: Color bar

Oscilloscope: Pin ㊷ of IC101

Adjustment method:

Minimize the residual chroma component by alternately adjusting RV101 and LV101. (See Fig. 5-16)

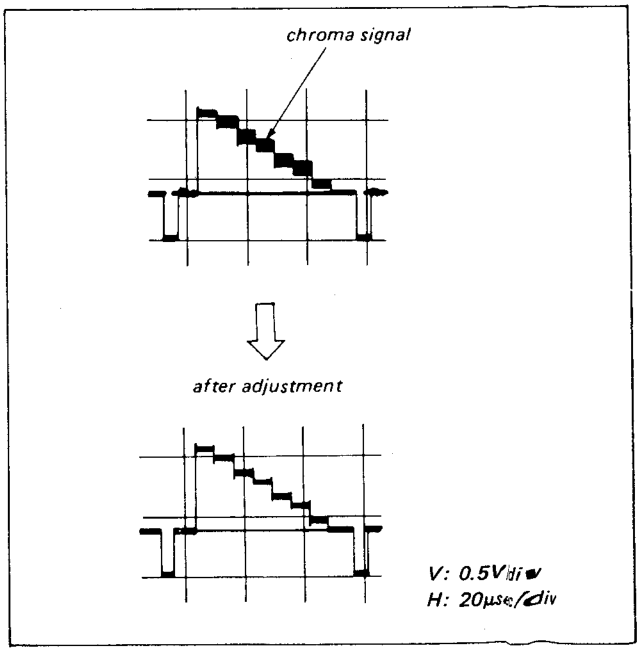

chroma signal
after adjustment
V: 0.5V/div
H: 20μsec/div

Fig. 5-16. Comb filter adjustment

3. Comb AGC Adjustment (VI-11 board)

Mode: Playback

Signal: Monoscope or prerecorded tape

Oscilloscope: Pin③of CN5

Adjustment method:

Adjust with RV301 so that the dropout corrected portion level is the same as the value before dropout.

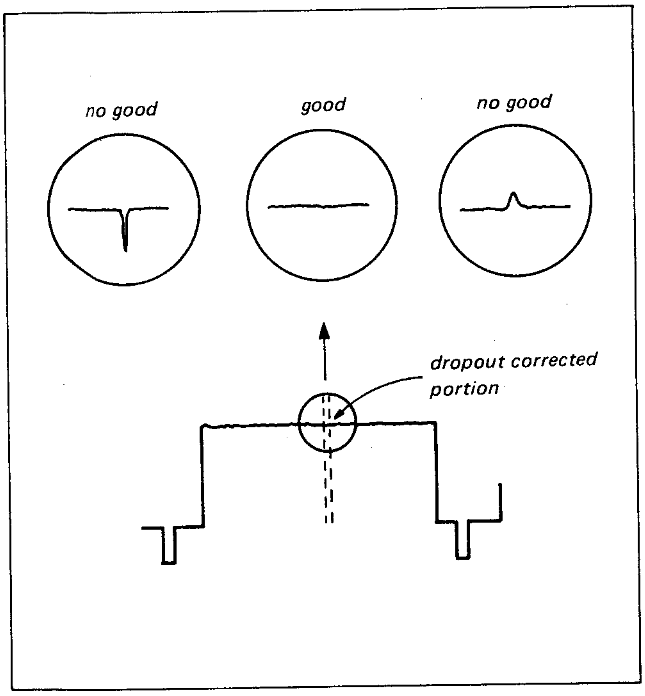

no good
good
no good
dropout corrected portion

Fig. 5-17.

4. Sync AGC Adjustment (VI-11 board)

Mode: Record or E-E

Signal: Color Bar

Oscilloscope: Pin③of CN5

Adjustment method:

Adjust to 1.0V ± 0.05 Vp-p with RV102. (See Fig. 5-18)

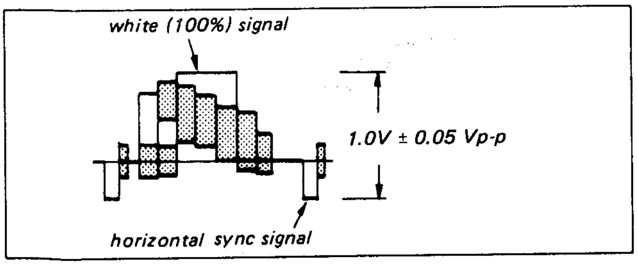

white (100%) signal
1.0V ± 0.05 Vp-p
horizontal sync signal

Fig. 5-18. Sync AGC adjustment

5. Y-FM Carrier Adjustment (VI-11 board)

Mode: Record or E-E

Signal: None

Frequency counter: Pin①of CN2

Adjustment method

(1) Set to Super-Beta recording mode
(BETA Hi-Fi selector switch: ON
SUPER-BETA switch: ON)

(2) Adjust to 4.4 MHz ± 0.05 MHz with RV201 (See Fig. 5-19)

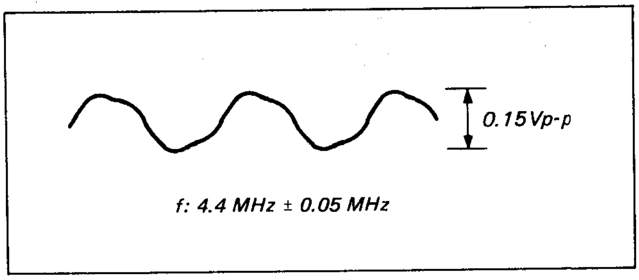

0.15Vp-p
f: 4.4 MHz ± 0.05 MHz

Fig. 5-19.

6. FM Modulator Deviation Adjustment (VI-11 board)

Mode: Record or E-E

Signal: Color bar

Spectrum analyzer: Pin①of CN2

Adjustment method:

(1) Adjust the spacing between f2 and f1 to 1.27 MHz. ±0.05MHz with RV202. (See Fig. 5-20)

(2) Adjust according to step 5 and 6 (1) repeatedly so that Y signal carrier and deviation adjustments are both satisfied.

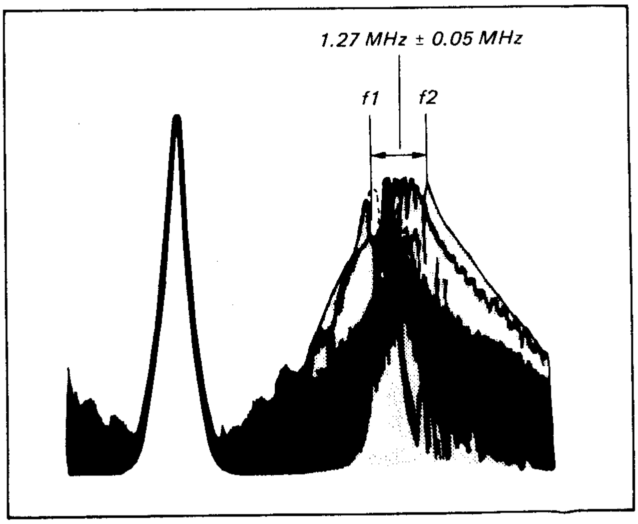


Fig. 5-20. FM Modulator Deviation Adjustment

7. Dark Clip Adjustment (VI-11 board)

Mode: BETA Hi-Fi recording mode and Super-Beta mode
Signal: None
Digital voltmeter: See Fig. 5-21

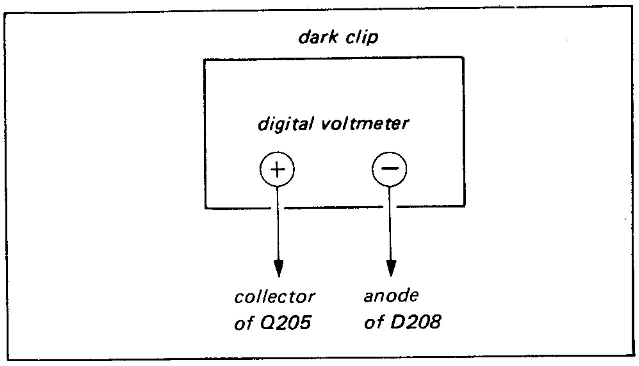

dark clip
digital voltmeter
+
−
collector of Q205
anode of D208

Fig. 5-21. Connection

Adjusting dark clip: Adjust to 0V ± 0.05V potential difference with RV203.

8. Y-FM Record Current Adjustment (RP-28 board)

Mode: Record (BETA Hi-Fi selector switch: ON
SUPER-BETA switch: ON)
Signal: None
Oscilloscope: Pin①of CN2 on RP-28 board
Adjustment method:

Adjust RV701 on VI-11 board to obtain the level listed below. (See Fig. 5-22)

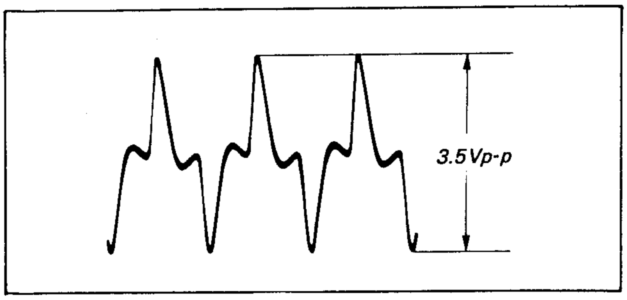


Fig. 5-22. Y-FM record current adjustment

9. fsc Adjustment (VI-11 board)

Mode: Playback
Signal: Color bar
Frequency counter: Pin③of CN3
Adjustment method:

(1) Set to playback mode.
(2) Adjust to 3.579545 Hz ± 10 Hz with RV404

10. Carrier Balance Adjustment (VI-11 board)

Mode: Playback
Signal: Alignment tape βII color bar
Spectrum analyzer: Pin ㊴ of IC401
Adjustment method:

Adjust 4.27MHz component with RV402 to a level lower than the 3.58 MHz component by −30dBs.(See Fig. 5-23)

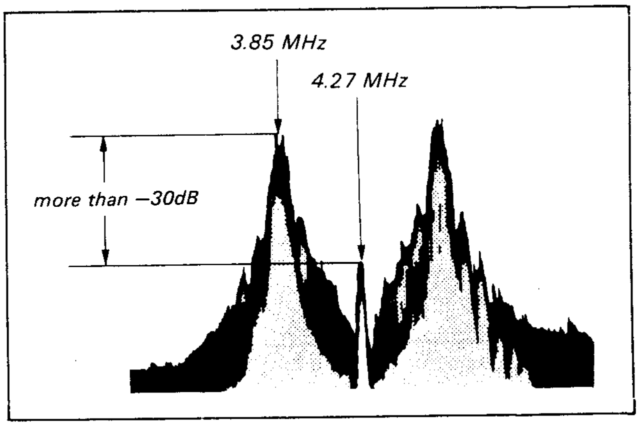


Fig. 5-23. Carrier balance adjustment

11. Chroma Record Current Adjustment (VI-11 board)

Mode: Record
Signal: Color bar
Oscilloscope: Emitter of Q405

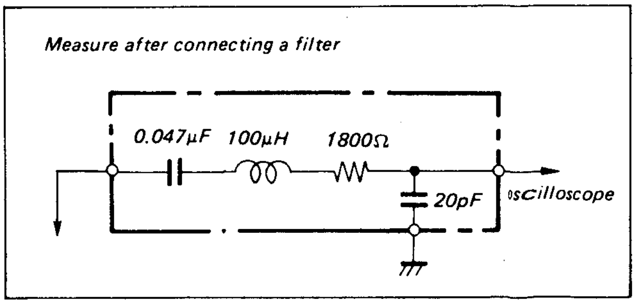

Measure after connecting a filter
0.047μF
100μH
1800Ω
20pF
oscilloscope

Fig. 5-24.

Adjustment method:

Adjust the level of the color bar "cyan" to 110 mV ± 10 mVp-p with RV401. (See Fig. 5-25)

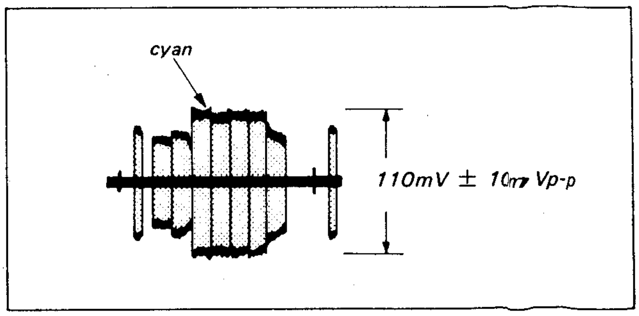


Fig. 5-25. Chroma record current adjustment

5-4-3. JOG Motion Playback System Alignment

1. **Skew Frequency Adjustment (VI-11 board)**
   Mode: Playback + Pause
   Signal: Alignment tape βII color bar
   Adjustment method:
   Adjust RV504 to remove skew.

2. **JOG AGC Adjustment (VI-11 board)**
   Mode: Playback +Pause
   Signal: Alignment tape βII or βIII color bar
   Oscilloscope: Pin③of CN5
   Adjustment method:
   Set for identical output levels during both playback and pause with RV502 and RV503.

3. **Output Level Adjustment When Pause Mode (VI-11 board)**
   Mode: Playback + Pause
   Signal: Alignment tape βIII color bar
   Oscilloscope: Pin ③ of CN5

   Input: DC range
   Adjustment method:
   Set for identical output levels during both playback and pause with RV501.

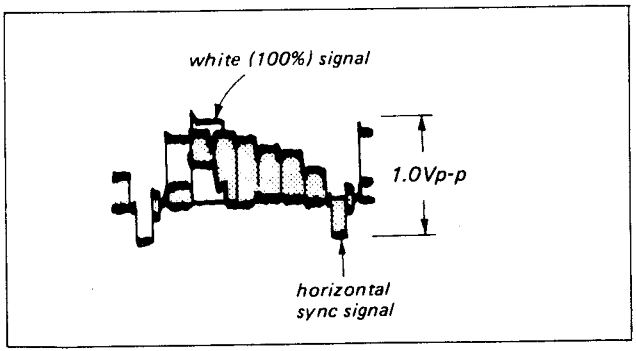


Fig. 5-26. JOG ACG adjustment

5-5. AUDIO SYSTEM ADJUSTMENT (AU-8 board)

Adjustments of the audio system shall be made in the βIII mode, otherwise note. Use a Dynamicron tape for adjustments.

[Connection of Related Equipment]

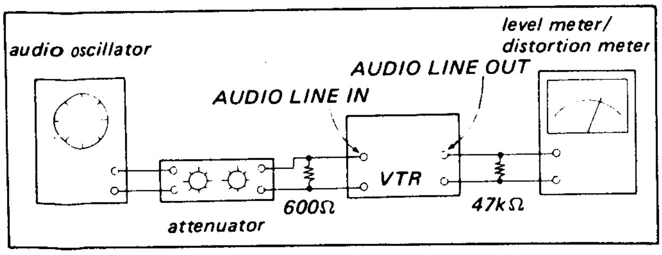


Fig. 5-27.

[Adjustment Sequence]

1. AC head adjustment ..... See "Mechanical Adjustment"
2. Playback frequency characteristic adjustment
3. Playback output level adjustment
4. E-E output level check
5. Bias oscillator and bias trap check
6. Record bias adjustment
7. Overall frequency characteristic check
8. Overall S/N check
9. Overall distortion check
10. BETA Hi-Fi recording carrier wave level check
11. Dynamic emphasis decorder gain and playback L-ch (R-ch) check
12. BETA Hi-Fi deviation check

5-5-1. AC Head Adjustment

Refer to "Mechanical Adjustment"

5-5-2. Playback Frequency Characteristic Check

Mode: playback
Signal: Alignment tape (Note: βII)
BETA Hi-Fi selector switch: OFF

Playback 333Hz and 7 kHz from the alignment tape and confirm that the level difference between 333Hz and 7 kHz 0dBs± 3dBs.

5-5-3. Playback Output Level Adjustment

Mode: playback
Signal: Alignment tape (Note: βII)
BETA Hi-Fi selector switch: OFF
Playback 333Hz from the alignment tape and adjust so that the output level is −30 dB ± 0.5 dB with RV901.

5-5-4. E-E Output Level Check

BETA Hi-Fi selector switch: OFF

(1) Input a 333Hz, −30 dBs signal on L-CH and R-CH simultaneously so audio line input.
(2) Confirm that the audio line output level is −27 dBs ± 3 dBs.

5-5-5. Bias Oscillator Frequency and Bias Trap Check

Input is "AUDIO LINE IN", inputs pins for both L-CH and R-CH are shorted.

(1) Input is no-signal, in recording mode.
(2) Bring the oscilloscope probe close to T900 inside the shield case, via the frequency counter. Confirm that the oscillation frequency is 65 kHz ± 6.5 kHz. (See Fig. 5-28)
(3) Connect the oscilloscope to IC900 pin ⑲ and confirm that bias leak is 340 mV ± 100 mV.

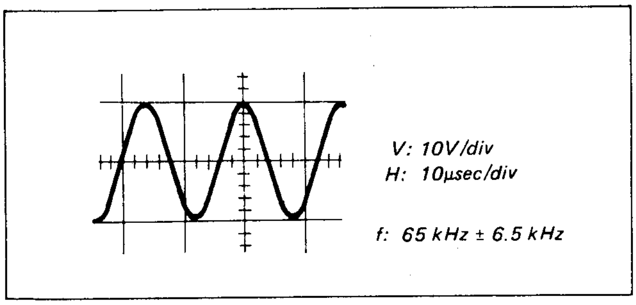


Fig. 5-28. Bias oscillator check

5-5-6. Record Bias Adjustment

Tape path adjustment should be completed so that the 7 kHz playback level satisfies the specifications in βII mode.

(1) Supply a 333Hz signal.
(2) Terminate the audio line output pin with a 47 kΩ resistor and connect a level meter.
(3) Turn the attenuator and adjust the input signal so that the level meter indication is −30 dBs.
(4) Set to βIII recording mode.
(5) Record in this state for 20 seconds.
(6) Supply a 7 kHz signal, and record for 10 seconds.
(7) Playback the recorded section of the tape and check that the output level at 333Hz and 7 kHz. (The level is not read for the first 11 seconds of the 333Hz playback signal.)
(8) Confirm that the output level at 7 kHz is 0 dB ± 2 dB relative to the output level at 333Hz.
(9) When the specifications are not met, adjust RV902 and repeat items (1)～(8).

5-5-7. Overall Frequency Characteristic Check

(Note: βIII)

BETA Hi-Fi selector switch: OFF

REC LEVEL control: MAN.

(1) Connect a 333Hz signal
(2) Set up the E-E mode and adjust the oscillator output level so that the level meter reading is −30 dB.
(3) Record signals.
(4) Change the frequency to 50Hz, 100Hz, 333Hz, 7kHz, and 10kHz and repeat Steps (2) and (3).
(5) Playback the recorded section of the tape and verify that the level is within the specification. (See Fig. 5-29)

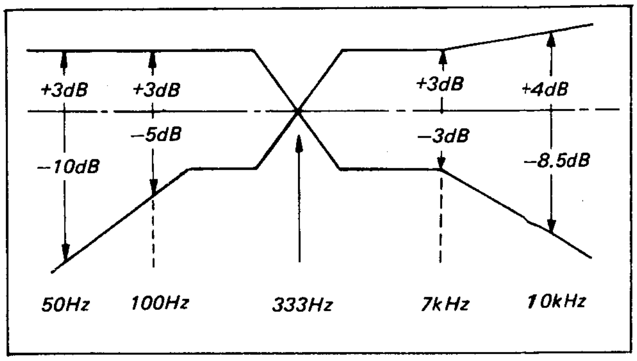


Fig. 5-29.

(6) Turn the BETA Hi-Fi selector switch to ON, the MPX FILTER and PCM selector switches to OFF, and apply a 400 Hz signal to audio line input pin.
(7) Set up the E-E mode and adjust the oscillator output level so that the level meter reading is −20 dB.
(8) Record signals.
(9) Change the frequency to 20Hz, 100Hz, 400Hz, 10kHz and 20kHz and repeat Steps (7) and (8).
(10) Playback the recorded section of the tape and verify that the level is within the specification. (See Fig. 5-30)
(11) Turn the MPX FILTER and PCM selector switches on, and repeat item (7) with input signal frequency of 16 kHz.
(12) Confirm that the output level at 16kHz is −20 dB or less relative to the output level at 400Hz.

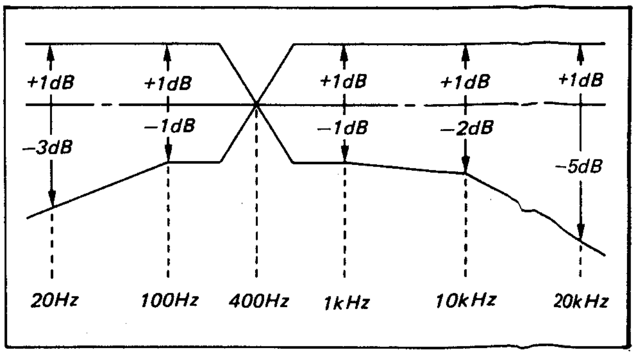


Fig. 5-30.

5-5-8. Overall S/N Check (Note: βII)

BETA Hi-Fi selector switch: OFF

MONITOR SELECT switch: STEREO

(1) Apply a 333Hz signal simultaneously to L-CH and R-CH audio line input and adjust so that R-CH level is −10 dBs.

(2) Record signals.

(3) Switch to no-signal input while continuing in record mode. (Ground input for both L-CH and R-CH.)

(4) Playback the recorded portion, and confirm that the level difference between the 333Hz signal and no-signal portion (the portion immediately after the 333Hz signal) is more than 33 dBs.

5-5-9. Overall S/N Check (BETA Hi-Fi mode)

(Note: βII)

BETA Hi-Fi selector switch: OFF

MONITOR SELECT switch: STEREO

(1) Terminate the audio line output pin with a 47 kΩ resistor and connect a level meter.

(2) Apply a 400Hz signal simultaneously to L-CH and R-CH audio line input and adjust so that R-CH level is −10 dBs.

(3) Record signals.

(4) Switch to no-signal input while continuing in record mode. (Ground input for both L-CH and R-CH.)

(5) Playback the recorded portion, and confirm that the level difference between the 400Hz signal and no-signal portion (the portion immediately after the 400Hz signal) is more than 65 dBs.

5-5-10. Overall Distortion Check (Note: βIII)

BETA Hi-Fi selector switch: OFF

MONITOR SELECT switch: STEREO

(1) Apply a 333Hz signal simultaneously to L-CH and R-CH audio line input and adjust so that R-CH level is −10 dBs.

(2) Record signals.

(3) Playback the recorded section of the tape and verify that the distortion is below 4%.

5-5-11. Overall Distortion Check (BETA Hi-Fi mode)

(Note: βII)

BETA Hi-Fi selector switch: OFF

MONITOR SELECT switch: STEREO

(1) Apply a 400Hz signal simultaneously to L-CH and R-CH audio line input and adjust so that R-CH level is −10 dBs.

(2) Record signals.

(3) Playback the recorded section of the tape and verify that the distortion is below 0.5%.

5-5-12. BETA Hi-Fi Recording Carrier Wave Level Check

Mode: Record (BETA Hi-Fi selector switch: ON)

Signal: None

(1) Carrier wave 1 (1.38 MHz) level check
   1. Connect the oscilloscope to pin ㊴ of IC3.
   2. Confirm that peak value is 0.8 Vp-p ± 0.1 Vp-p.

(2) Carrier wave 2 (1.68 MHz) level check
   1. Connect the oscilloscope pin ⑪ of IC3.
   2. Confirm that peak value is 180mVp-p ± 20mVp-p.

(3) Carrier wave 3 (1.53 MHz) level check
   1. Connect the oscilloscope pin ㊱ of IC3.
   2. Confirm that peak value is 180 mVp-p ± 20 mVp-p.

(4) Carrier wave 4 (1.83 MHz) level check
   1. Connect the oscilloscope to pin⑨of IC3.
   2. Confirm that peak value is 180 mVp-p ± 20 mVp-p.

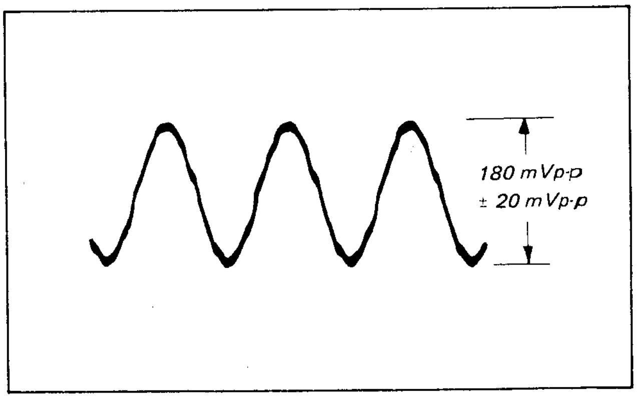


Fig. 5-31. Recording carrier wave level adjustment

* Interchangeability Check
Low level noise should not be noticeably large on a commercially sold soft tape BETA Hi-Fi signal portion.

5-5-13. Dynamic Emphasis Decoder Gain and Playback L-CH (R-CH) Check

(1) Playback alignment tape in the BETA Hi-Fi mode.

(2) Confirm that the level meter to pin⑧of FL101 (2/2) (FL101 (1/2)) becomes −20 dBs± 0.3 dBs.

(3) Connect the level meter to pin①of IC602 and pin ⑦of IC602

(4) BETA Hi-Fi mode and confirm that level meter is −14 dBs± 0.5 dBs.

5-5-14. BETA Hi-Fi Deviation Check

BETA Hi-Fi selector switch: ON

(1) Terminate the audio line output pin with a 47kΩ resistor and connect a level meter.

(2) Apply a 400Hz signal simultaneously to L-CH and R-CH audio line input and adjust so that R-CH level is −10 dBs.

(3) Confirm that E-E mode audio line output and output when self-recording is played back are the same.

5-6. TUNER SYSTEM ADJUSTMENT (TU-76, MP-7 board)

1. AFT Adjustment (TU-76 board)

(1) Receive a TV broadcast signal.

(2) Turn the AFT switch off.

(3) Press the tuning button and set for the optimum state while observing the monitor TV screen. (There should be no beat.)

(4) Connect the digital voltmeter to pin ⑦ of IC201.

(5) Adjust T202 so that the level is 4.6 V DC.

(6) Turn the AFT switch on, receive each channel, and check to make sure that there is no beat or picture disturbance.

2. RF AGC Adjustment (TU-76 board)

(1) Adjust the monitor TV for best contrast and receive a VHF TV broadcast signal.

(2) Adjust RV201 so that snow noise is visible.

(3) Turn RV201 in the opposite direction to that in (2) and set at the point where snow noise disappears.

(4) Receive each (VHF & UHF) channel and confirm that there is no beat, picturbance or snow noise.

3. Audio Carrier Lock SIF Adjustment (TU-76 board)

3-1. VCO voltage adjustment

(1) Short IC202 pin ⑨ and pin ⑩ across the shortest distance.

(2) Connect a digital voltmeter to IC102 pin ④.

(3) Adjust the 2.7 V ±0.05 V DC with RV203.

(4) Return IC202 pins ⑨ and ⑩ to normal.

3-2. T206 adjustment

(1) Recieve a TV broadcast signal.

(2) Connect a digital voltmeter to IC202 pin ④.

(3) Adjust the 2.7 V ±0.05 V DC with T206. Audio should be output normally at this time.
Note:
2.7 V voltage is generated at several points, not just one, so find the point that varies between 1V — 4V.

3-3. SIF discriminator adjustment

(1) Receive a TV broadcast signal.

(2) Connect a digital voltmeter to IC201 pin ⑬.

(3) Adjust to 3.9 V ± 0.2 V DC with T203.

4. Multiplex Decoder Adjustment (MP-7 board)

When inputting a signal to IC801 pin ①, pull up C801 minus side with a 470Ω resistor to 9 V and cut DC.

4-1. SAP-BPF adjustment

(1) Input a 62.94 kHz 0.42 Vp-p sine wave to IC801 pin ①.

(2) Adjust RV802 so that IC801 pin ⑥ output is minimum.

(3) Set the frequency to 78.67 kHz and confirm that IC801 pin ㊲ output is less than 30 mVp-p.

4-2. Stereo VCO adjustment

(1) Short the IC801 pin ① to ground with a chemical capacitor.

(2) Connect a frequency counter to IC801 pin ㉜ and adjust RV805 so that the frequency is 62.94 ±0.1 kHz.

4-3. SAP VCO adjustment

(1) Select an illegal channel (channel 0, etc.) to make MUTE high and read IC801 pin ㉕ DC voltage VM.

(2) Input a 78.67 kHz 0.42 Vp-p to IC801 pin ① and adjust RV803 so that IC801 pin ㉕ DC voltage is VM 480.1 V.

4-4. Pilot cancel adjustment

(1) Input a 15.75 kHz 0.14 Vp-p to IC801 pin ①.

(2) Adjust RV804 so that IC801 pin ㊵ output 15.75 kHz output is minimum. (If it is turned too much, output will become zero and operation will be mono.)

4-5. Output level check

Input a 300 Hz 0.7 Vp-p to IC801 pin ①. Check CN106 pin ① output V_L and ② output V_R. V_L = 400 ±40 mVrms. V_R = V_L ± 25 mVrms.

5. Noise Reduction Adjustment (MP-7 board)

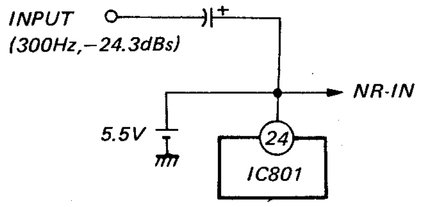
5-1. Time constant adjustment

Adjust RV830 so that the voltage drop at both sides of R839 is 15 ± 1 mVp-p.

5-2. Variable de-emphasis adjustment

(1) Set RV832 to mechanical center.

(2) Apply 5.5 V bias to IC801 pin ㉔, cut DC with a capacitor and input 300 Hz −24.3 dBs.



(3) Adjust RV831 so that CN106 pin ① and ② output is V_L/7 ±5 mV, and read IC830 pin ⑦ output Va.

(4) In the same way, input 8 kHz −17.2 dBs and adjust RV831 so that IC830 pin ⑦ output is Va −11.3 dBs.

6. Separation Check

6-1. Indicator check

Receive on MTS signal and adjust RV202 on TU-76 board indicator lights up. (AUTO STEREO SW should be ON)

6-2. Main level, L-R adjustment (MP-7 board)

Receive on MTS signal and adjust RV202 on TU-77 board and RV806 (L-R) so that separation is maximum. (RV202 should be near MAX and RV806 near center)

1 "H" for 12 seconds only when REC starts.
2 "H" when there is no CTL.
3 Depends on front panel β switch.
4 Outputs Beta mode set the time before.
5 Outputs Beta mode of the tape currently being played back.
6 βI: "L", βII: "L" only when tape moves, βIII: "H".
7 (RF SWP) when tape is stopped, "L" when tape is moving

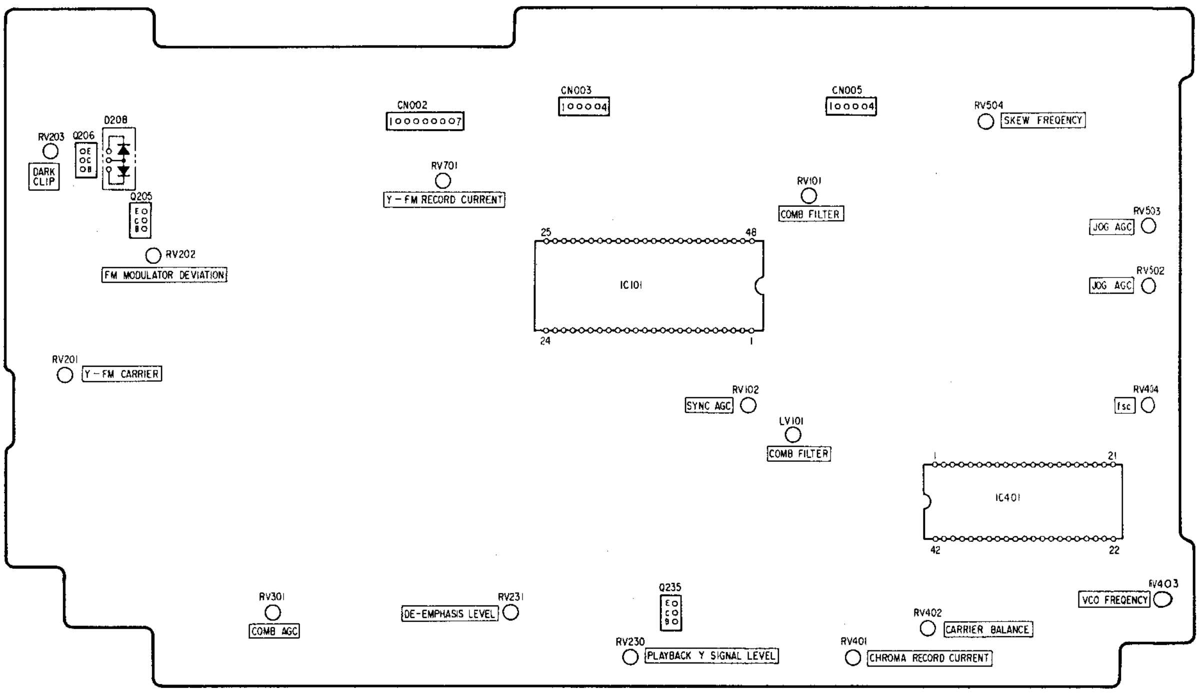
Refer to Timing Chart

7. Video Modulation Adjustment (TU-76 board)

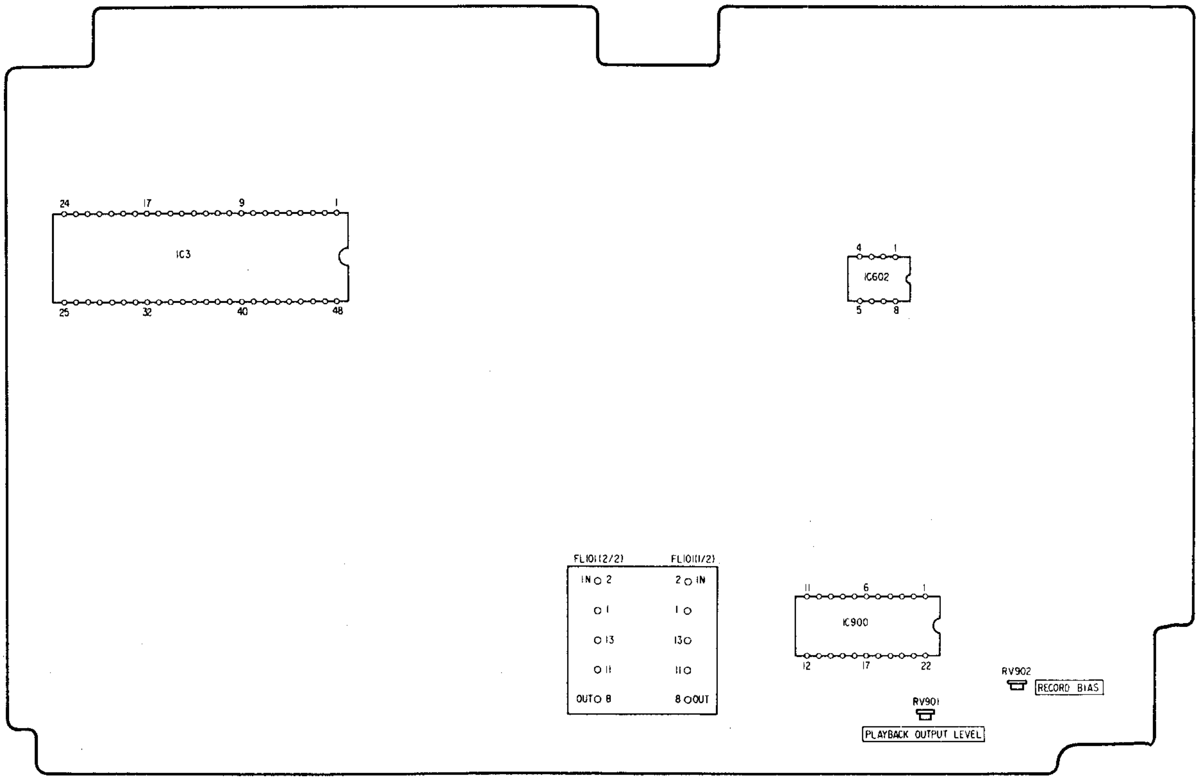
- Receive VTR RF modulator output on a TV.

Observe the TV video output in level on an oscilloscope, and select the same channel with the VTR. Receive RF modulator output on that TV, and adjust RV101 so that the video output level is about 88% ±3% relative to the previous level. In other words, the same picture will be a little darker when seen on the VTR.

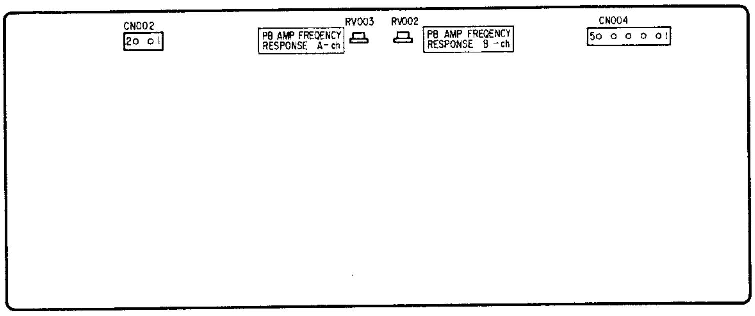
VI-11 BOARD
(Conductor side)


CN002
1OOOOOOO7
CN003
1OOOO4
CN005
1OOOO4
RV504
SKEW FREQENCY
D208
RV203
Q206
E
C
B
DARK CLIP
RV701
Y – FM RECORD CURRENT
RV101
COMB FILTER
Q205
E
C
B
RV503
JOG AGC
25
48
RV202
FM MODULATOR DEVIATION
IC101
RV502
JOG AGC
24
1
RV201
Y – FM CARRIER
RV102
SYNC AGC
RV404
fsc
LV101
COMB FILTER
1
21
IC401
42
22
Q235
E
C
B
RV403
VCO FREQENCY
RV301
COMB AGC
RV231
DE-EMPHASIS LEVEL
RV402
CARRIER BALANCE
RV230
PLAYBACK Y SIGNAL LEVEL
RV401
CHROMA RECORD CURRENT

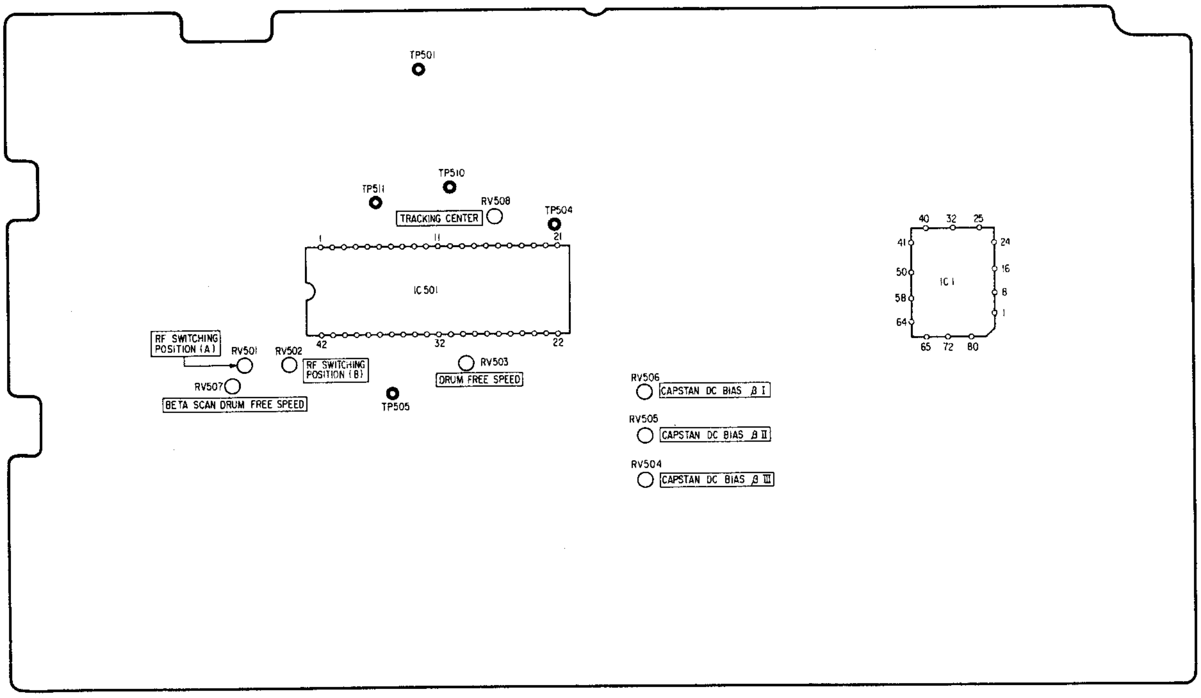
AU-8 BOARD
(Component side)


24
17
9
1
IC3
25
32
40
48
4
1
IC602
5
8
FL101(2/2)
FL101(1/2)
IN 2
2 IN
1
1
13
13
11
11
OUT 8
8 OUT
11
6
1
IC900
12
17
22
RV902
RECORD BIAS
RV901
PLAYBACK OUTPUT LEVEL

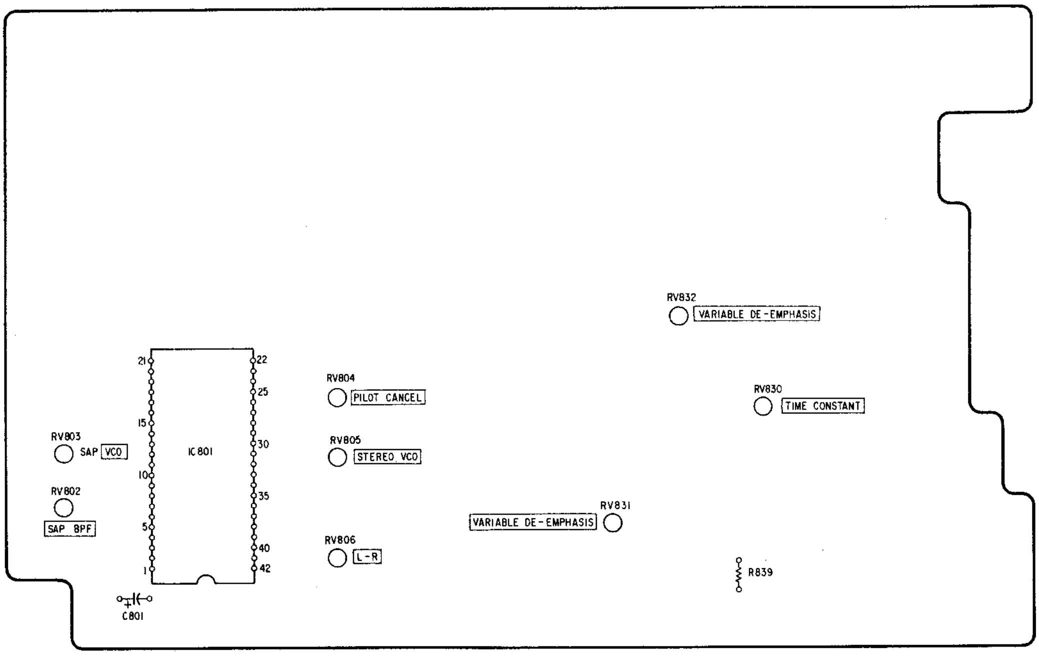
PR-28 BOARD
(Component side)


CN002
2 1
PB AMP FREQENCY RESPONSE A-ch
RV003
RV002
PB AMP FREQENCY RESPONSE B-ch
CN004
5 1

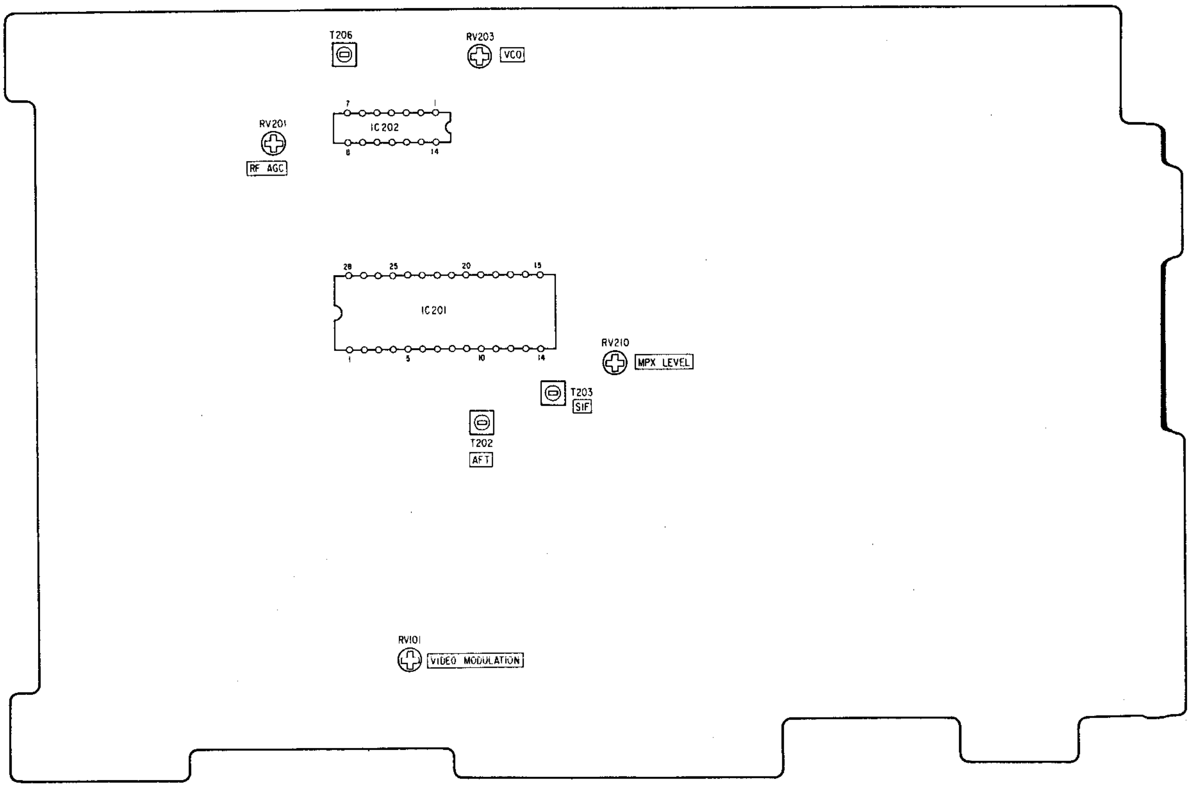
SS-32 BOARD
(Conductor side)


TP501
TP510
TP511
RV508
TRACKING CENTER
TP504
1
11
21
IC501
42
32
22
RF SWITCHING POSITION (A)
RV501
RV502
RF SWITCHING POSITION (B)
RV503
DRUM FREE SPEED
RV507
BETA SCAN DRUM FREE SPEED
TP505
RV506
CAPSTAN DC BIAS β I
RV505
CAPSTAN DC BIAS β II
RV504
CAPSTAN DC BIAS β III
40
32
25
41
24
50
16
IC1
58
8
64
1
65
72
80

MP-7 BOARD
(Conductor side)


RV832
VARIABLE DE-EMPHASIS
21
22
25
RV804
PILOT CANCEL
RV830
TIME CONSTANT
15
RV803
SAP
VCO
IC801
30
RV805
STEREO VCO
RV802
10
35
SAP BPF
5
RV831
VARIABLE DE-EMPHASIS
RV806
40
L-R
1
42
R839
C801

TU-76 BOARD
(Component side)

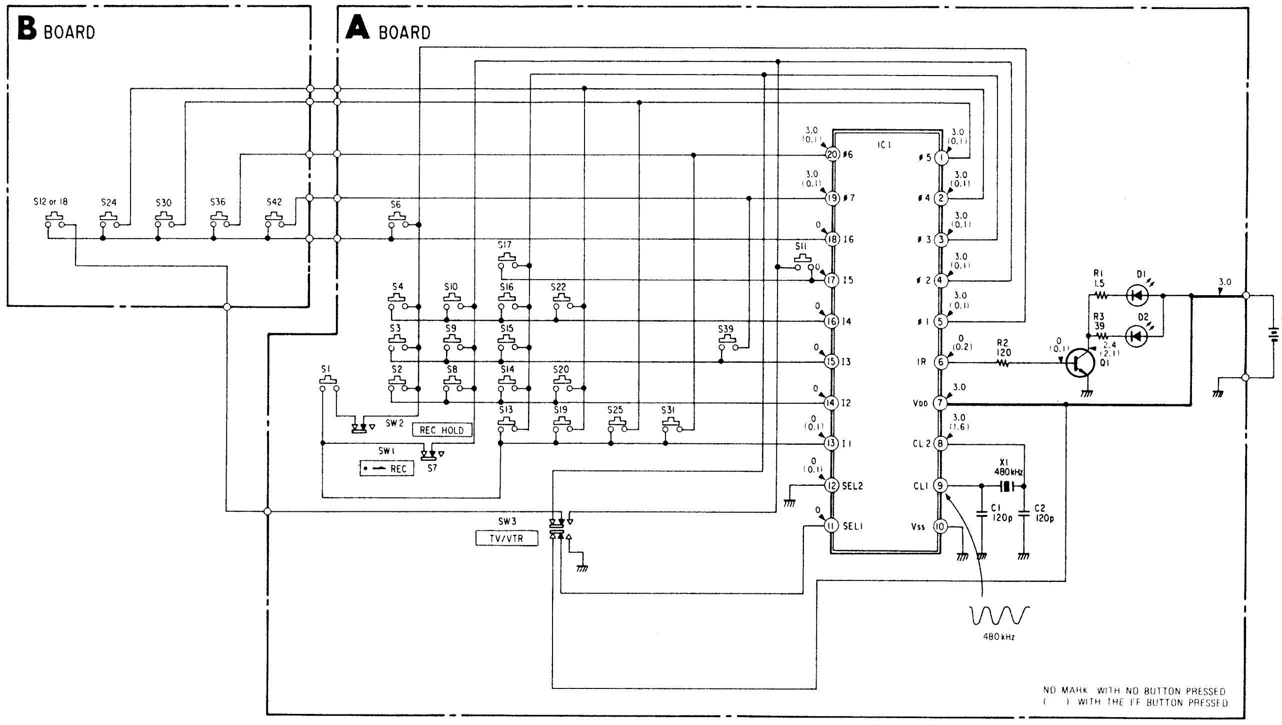

T206
RV203
VCO
7
1
RV201
IC202
8
14
RF AGC
28
25
20
15
IC201
1
5
10
14
RV210
MPX LEVEL
T203
SIF
T202
AFT
RV101
VIDEO MODULATION

A **B**

1 | 2 | 3 | 4 | 5 | 6 | 7

A B C D E F G H I

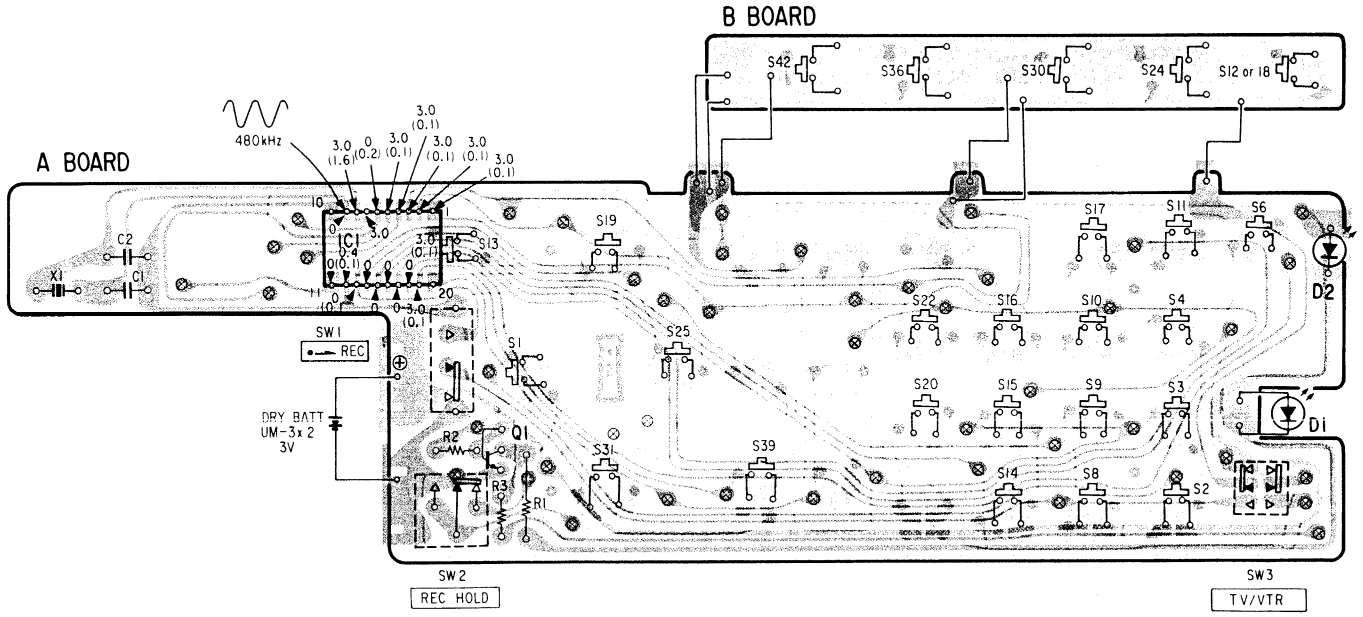
2. SCHEMATIC DIAGRAM


B BOARD
A BOARD
S12 or 18
S24
S30
S36
S42
S6
S17
S11
S4
S10
S16
S22
S3
S9
S15
S39
S2
S8
S14
S20
S1
S13
S19
S25
S31
SW2
REC HOLD
SW1
• → REC
S7
SW3
TV/VTR
IC1
ϕ6
ϕ7
I6
I5
I4
I3
I2
I1
SEL2
SEL1
ϕ5
ϕ4
ϕ3
ϕ2
ϕ1
IR
VDD
CL2
CL1
Vss
3.0 (0.1)
0 (0.2)
3.0 (1.6)
0 (0.1)
R1 1.5
R3 39
R2 120
D1
D2
Q1
2.4 (2.1)
X1 480kHz
C1 120p
C2 120p
DRY BATT UM-3 x 2 3V
480kHz

NO MARK: WITH NO BUTTON PRESSED
( ): WITH THE FF BUTTON PRESSED

I \ ϕ	ϕ1	ϕ2	ϕ3	ϕ4	ϕ5	ϕ6	ϕ7
I 1	S1 ■ STOP	S7 •→REC	S13 PAUSE/ STILL	S19 FF	S25 PLAY	S31 REW	
I 2	S2 1	S8 4	S14 7	S20 0			
I 3	S3 2	S9 5	S15 8				S39 FRAME
I 4	S4 3	S10 6	S16 9	S22 ENTER			
I 5			S17 DISPLAY				
I 6	S6 POWER	S12 TV/	S18 /VTR	S24 VOLUME +	S30 VOLUME −	S36 CHANNEL +	S42 CHANNEL −

3. PRINTED WIRING BOARD


B BOARD
S42
S36
S30
S24
S12 or 18
A BOARD
480kHz
3.0 (0.1)
3.0 (1.6)
0 (0.2)
3.0 (0.1)
3.0 (0.1)
0 (0.1)
10
IC1
11
20
X1
C2
C1
S13
S19
S17
S11
S6
S22
S16
S10
S4
D2
S1
S25
S20
S15
S9
S3
D1
SW1
• → REC
DRY BATT UM-3x2 3V
R2
Q1
R3
R1
S31
S39
S14
S8
S2
SW2
REC HOLD
SW3
TV/VTR

NO MARK: WITH NO BUTTON PRESSED
( ): WITH THE FF BUTTON PRESSED

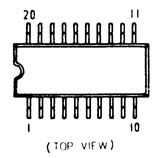
Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics.
- The red lines show the main voltages.
- All voltages are dc measured with a VOM (10kΩ/V).

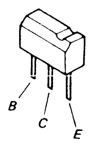
When indicating parts by reference number, please include the board name.

- o— : Indicates a leadwire mounted on the component side.
- •— : Indicates a leadwire mounted on the printed side.
- ▨ Component side. (inner)
- ▨ **Component side.**
- ▨ **Soldering side.**
- ▨ **B + pattern**

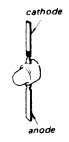
CX23094-01


20
11
1
10
(TOP VIEW)

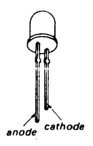
2SC2673



SLR-932A

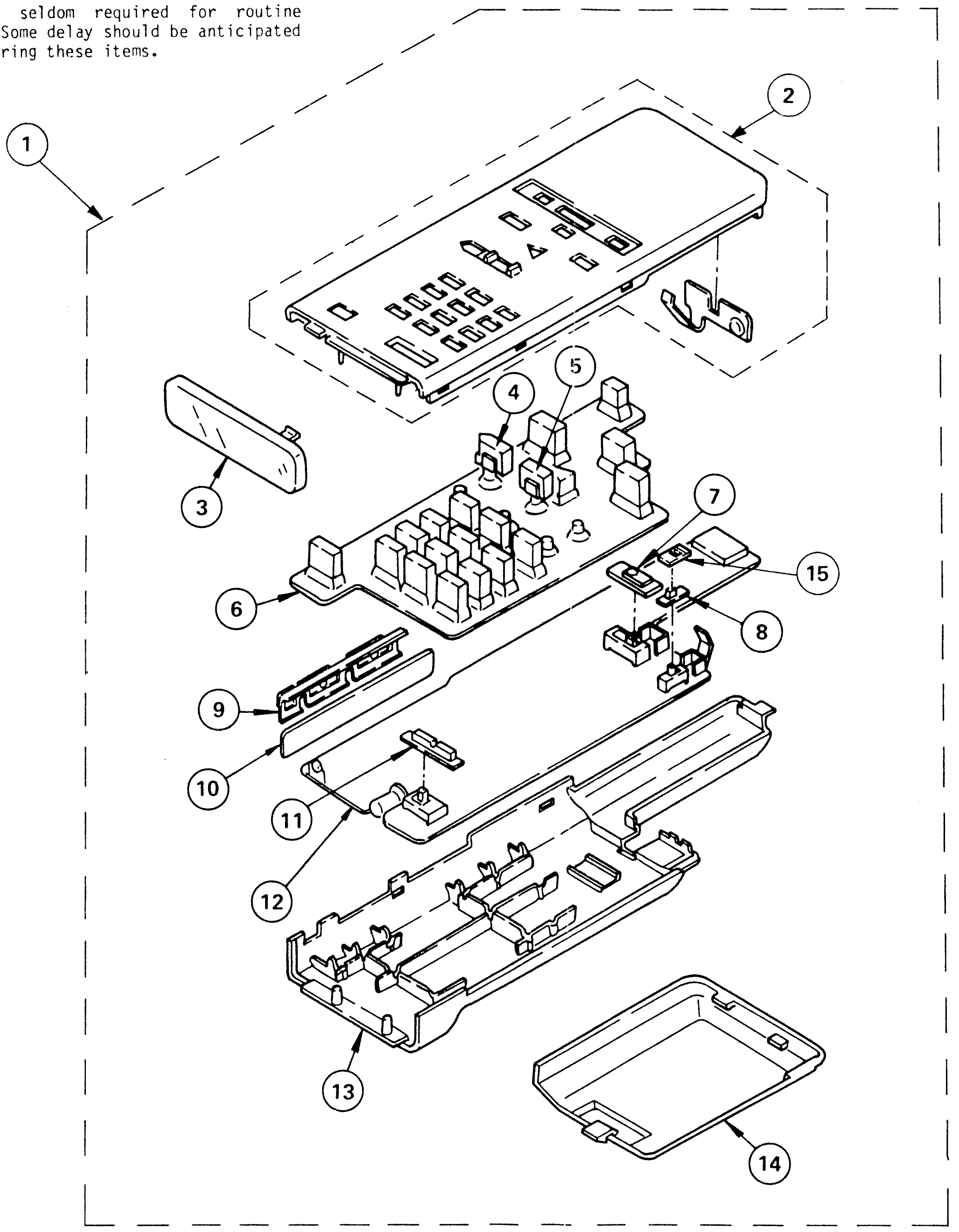

cathode
anode

SR106C


anode
cathode

4. EXPLODED VIEW

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.



No.	Pert No.	Description	Remark
1	A-6765-773-A	COMMANDER ASSY	2-15
2	X-2387-103-1	CASE ASSY, UPPER	
3	2-387-133-01	PLATE, FROSTED	
4	2-387-130-11	KEY TOP (C)	
5	2-387-129-11	KEY TOP (B)	
6	2-387-142-01	RUBBER (A), CONTACT	
7	2-387-101-11	BUTTON, RECORDING	
8	2-383-127-11	BUTTON, SLIDE	
9	2-387-132-01	RUBBER, CONTACT	
10	*1-614-843-11	B-200 BOARD	
11	2-387-118-11	BUTTON, SLIDE	
12	*1-614-838-21	A-200 BOARD	
13	2-387-138-21	CASE, LOWER	
14	2-387-134-01	COVER, BATTERY	
15	2-387-113-01	PLATE, COLOR	

5. ELECTRICAL PARTS LIST

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F : nonflammable

- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

CAPACITORS
- MF : μF, PF : μμF

COILS
- MMH : mH, UH : μH

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
	*1-614-838-21	A-200 BOARD ************	
	2-387-103-01	TERMINAL (A), BATTERY	
	2-387-104-01	TERMINAL (B), BATTERY	
		CAPACITOR	
C1	1-102-107-00	CERAMIC 120PF 10% 50V	
C2	1-102-107-00	CERAMIC 120PF 10% 50V	
		DIODE	
D1	8-719-912-39	DIODE SLR-932A	
D2	8-719-100-06	DIODE SR106C	
		IC	
IC1	8-759-918-70	IC CX23094-01	
		TRANSISTOR	
Q1	8-729-967-32	TRANSISTOR 2SC2673	
		RESISTOR	
R1	1-247-073-00	CARBON 1.5 5% 1/4W	
R2	1-247-809-00	CARBON 120 5% 1/6W	
R3	1-247-797-00	CARBON 39 5% 1/6W	
		SWITCH	
S1	1-554-364-00	SWITCH, SLIDE	
S2	1-553-977-00	SWITCH, SLIDE	
S3	1-554-663-00	SWITCH, SLIDE	
		CRYSTAL	
X1	1-527-476-00	OSCILLATOR, CERAMIC	

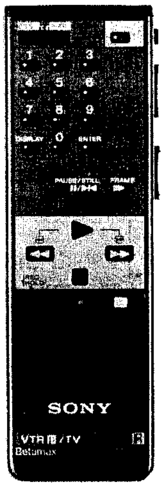
****

Ref.No	Part No.	Description	Remark
	*1-614-843-11	B-200 BOARD ************	

****

RMT-133

SERVICE MANUAL


1
2
3
4
5
6
7
8
9
DISPLAY
0
ENTER
PAUSE/STILL
FRAME
SONY
VTR
/TV
Betamax

SPECIFICATIONS

Remote Commander RMT-133

Remote control system	Infrared control
Power requirements	3 V dc, 2 size AA batteries (IEC designation R6)
Dimensions	Approx. 57 × 20 × 175 mm (w/h/d) (2¼ × ¾ × 7 inches) incl. projecting parts and controls
Weight	Approx. 135 g (4.3 oz) incl. batteries

REMOTE COMMANDER

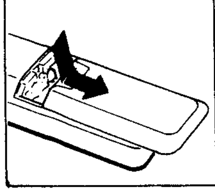
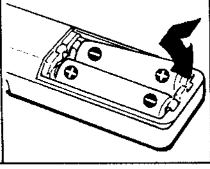
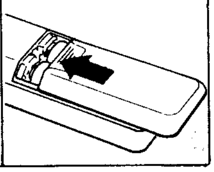
SONY®

ACC

1. REMOTE CONTROL OPERATION

You can control almost all the functions of this video cassette recorder from your armchair using the supplied Remote Commander.

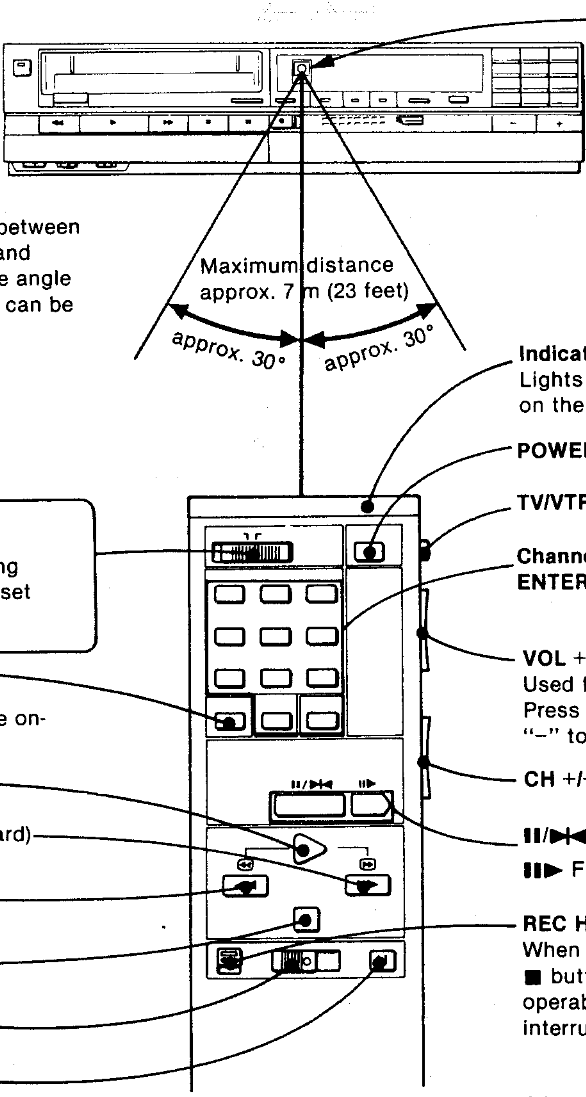
BATTERY INSERTION

1 Open the lid. 	**2** Insert two size AA (IEC designation R6) batteries with correct polarity. 	**3** Close the lid. 

Battery life
In normal operation, batteries will last for about six months. If the range of the Remote Commander becomes noticeably shorter, replace the batteries with new ones. When the batteries are exhausted, the indicator will not light when the buttons on the Commander are pressed.

If the Remote Commander is not to be used for a long period of time, remove the batteries to avoid possible damage from battery leakage.

OPERATION



Remote sensor
Point the Commander here.

There should be no obstacle between the Commander and the remote sensor.

The shorter the distance between the Remote Commander and the recorder, the wider the angle within which the recorder can be controlled.

Indicator
Lights up when any of the buttons on the Commander is pressed.

POWER switch *

TV/VTR button *

Channel number buttons and ENTER button *

Remote control TV/VTR selector
Normally set to VTR for operating the recorder. To operate the TV, set to TV.

DISPLAY button *
Used for TV operation only.
Press to retain or extinguish the on-screen display of the TV.

VOL +/– (volume) button *
Used for TV operation only.
Press "+" to increase volume, and "–" to reduce volume.

CH +/– (channel scan) button *

▶ (play)

▶▶ (fast forward)

◀◀ (rewind)

■ (stop)

● (record)

II (pause)

II/▶◀ PAUSE/STILL

II▶ FRAME

REC HOLD (recording hold) switch
When this switch is slid downwards, ■ button on the Commander is not operable. This prevents accidental interruption of recording.

- The buttons with * mark are functional also for/only for Sony remote control TVs. As the functions are limited depending on the TV, refer to the instruction manual of the TV for details.

SL-HF600
RMT-133

SONY
SERVICE MANUAL

US Model
Canadian Model
PX Model

August, 1985

CORRECTION -1

Correct the service manual as shown below.

☛ : corrected portion

5. EXPLODED VIEWS: Page 130

Correct				Incorrect			
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
251	A-6050-261-A	DRUM ASSY (DSH-51A-R)	252-256	251	A-6050-259-A	DRUM ASSY (DSH-50A-R)	252-256
252	A-6760-066-B	SPRING ASSY, TAPE RETAINER		252	A-6760-066-B	SPRING ASSY, TAPE RETAINER	
253	A-6760-138-A	DRUM ASSY, UPPER		253	A-6760-138-A	DRUM ASSY, UPPER	
254	3-669-157-00	BOLT (WASHER) (2.6X8)		254	3-669-157-00	BOLT (WASHER) (2.6X8)	
255	A-6762-178-A	DISK ASSY (DSR-51-R)		255	A-6762-177-A	DISK ASSY (DSR-50-R)	
256	X-3669-105-0	SPACER BLOCK ASSY		256	X-3669-105-0	SPACER BLOCK ASSY	

MICROFILM

9-972-394-91

Sony Corporation

English
85H0979-1
Printed in Japan

© 1985

Consumer
VIDEO

SL-HF600
RMT-133

SONY®
SERVICE MANUAL

US Model
Canadian Model
PX Model

January, 1986

CORRECTION-2

Correct the service manual as shown below.

☛ : corrected portion

5. EXPLODED VIEWS: Page 125

Correct				Incorrect			
No.	Pert No.	Description	Remark	No.	Pert No.	Description	Remark
1	X-3693-404-1	CASE ASSY (BLACK), UPPER		1	X-3693-404-1	CASE ASSY (BLACK), UPPER	
2	X-3684-146-2	LID ASSY, PRESET		2	X-3684-146-2	LID ASSY, PRESET	
3	*3-703-845-01	LABEL (N) (U/C), MAIN CAUTION		3	*3-703-845-01	LABEL (N) (U/C), MAIN CAUTION	
4	4-886-821-21	SCREW, M3 CASE STOPPER		4	4-886-821-21	SCREW, M3 CASE STOPPER	
5	*3-684-356-01	PLATE, BOTTOM		5	*3-684-356-01	PLATE, BOTTOM	
6	1-520-481-11	METER, LEVEL		6	1-520-481-11	METER, LEVEL	
7	X-3693-417-1	PANEL ASSY, FRONT	8-28	7	X-0770-093-0	PANEL ASSY, FRONT	8-28
8	3-570-895-02	SPRING, TENSION		8	3-570-895-02	SPRING, TENSION	
9	3-684-461-01	MAGNET, POCKET LOCK		9	3-684-461-01	MAGNET, POCKET LOCK	
10	3-693-421-11	BUTTON (-), UD		10	3-693-421-11	BUTTON (-), UD	
11	3-693-420-11	BUTTON (+), UD		11	3-693-420-11	BUTTON (+), UD	
12	3-693-405-01	BUTTON, CLOCK		12	3-693-405-01	BUTTON, CLOCK	
13	3-693-404-01	BUTTON, CHECK		13	3-693-404-01	BUTTON, CHECK	
14	3-693-418-01	BUTTON, TIMER		14	3-693-418-01	BUTTON, TIMER	
15	3-693-419-01	BUTTON, NEXT		15	3-693-419-01	BUTTON, NEXT	
No.	Pert No.	Description	Remark	No.	Pert No.	Description	Remark
16	3-693-418-11	BUTTON, TIMER		16	3-693-418-11	BUTTON, TIMER	
17	3-693-447-01	BUTTON, 10 KEY		17	3-693-447-01	BUTTON, 10 KEY	
18	3-693-447-11	BUTTON, 10 KEY		18	3-693-447-11	BUTTON, 10 KEY	
19	3-693-447-21	BUTTON, 10 KEY		19	3-693-447-21	BUTTON, 10 KEY	
20	3-693-447-31	BUTTON, 10 KEY		20	3-693-447-31	BUTTON, 10 KEY	
21	3-693-447-41	BUTTON, 10 KEY		21	3-693-447-41	BUTTON, 10 KEY	
22	3-693-447-51	BUTTON, 10 KEY		22	3-693-447-51	BUTTON, 10 KEY	
23	3-693-447-61	BUTTON, 10 KEY		23	3-693-447-61	BUTTON, 10 KEY	
24	3-693-447-71	BUTTON, 10 KEY		24	3-693-447-71	BUTTON, 10 KEY	
25	3-693-447-81	BUTTON, 10 KEY		25	3-693-447-81	BUTTON, 10 KEY	
26	3-693-447-91	BUTTON, 10 KEY		26	3-693-447-91	BUTTON, 10 KEY	
27	3-693-448-01	BUTTON, (2), 10 KEY		27	3-693-448-01	BUTTON, (2), 10 KEY	
28	3-693-448-11	BUTTON, (2), 10 KEY		28	3-693-448-11	BUTTON, (2), 10 KEY	
29	X-3693-409-2	DOOR ASSY		29	X-0770-131-0	DOOR ASSY	

MICROFILM

Sony Corporation

English
86A0978-1
Printed in Japan
© 1986

Consumer
VIDEO

SL-HF600
RMT-133

SONY®
SERVICE MANUAL

US Model
Canadian Model
PX Model
March, 1986

CORRECTION-3

The following corrections should be made in the Service Manual.
☛ : corrected portion

MICROFILM

9-972-394-93

Sony Corporation

English
86C0978-1
Printed in Japan
© 1986

Consumer
VIDEO

5-5-14. BETA Hi-Fi Deviation Check

BETA Hi-Fi selector switch: ON

(1) Terminate the audio line output pin with a 47kΩ resistor and connect a level meter.

(2) Apply a 400Hz signal simultaneously to L-CH and R-CH audio line input and adjust so that R-CH level is −10 dBs.

(3) Confirm that E-E mode audio line output and output when self-recording is played back are the same.

5-6. TUNER SYSTEM ADJUSTMENT (TU-76, MP-7 board)

1. AFT Adjustment (TU-76 board)

(1) Receive a TV broadcast signal.
(2) Turn the AFT switch off.
(3) Press the tuning button and set for the optimum state while observing the monitor TV screen.
(There should be no beat.)
(4) Connect the digital voltmeter to pin ⑦ of IC201.
(5) Adjust T202 so that the level is 4.6 V DC.
(6) Turn the AFT switch on, receive each channel, and check to make sure that there is no beat or picture disturbance.

2. RF AGC Adjustment (TU-76 board)

(1) Adjust the monitor TV for best contrast and receive a VHF TV broadcast signal.
(2) Adjust RV201 so that snow noise is visible.
(3) Turn RV201 in the opposite direction to that in (2) and set at the point where snow noise disappears.
(4) Receive each (VHF & UHF) channel and confirm that there is no beat, picturbance or snow noise.

3. Audio Carrier Lock SIF Adjustment (TU-76 board)

3-1. VCO voltage adjustment

(1) Short IC202 pin ⑨ and pin ⑩ across the shortest distance.
(2) Connect a digital voltmeter to IC102 pin ④.
(3) Adjust the 2.7 V ±0.05 V DC with RV203.
(4) Return IC202 pins ⑨ and ⑩ to normal.

3-2. T206 adjustment

(1) Recieve a TV broadcast signal.
(2) Connect a digital voltmeter to IC202 pin ④.
(3) Adjust the 2.7 V ±0.05 V DC with T206. Audio should be output normally at this time.
Note:
2.7 V voltage is generated at several points, not just one, so find the point that varies between 1V — 4V.

3-3. SIF discriminator adjustment

(1) Receive a TV broadcast signal.
(2) Connect a digital voltmeter to IC201 pin ⑬.
(3) Adjust to 3.9 V ± 0.2 V DC with T203.

4. Multiplex Decoder Adjustment (MP-7 board)

Input a signal via C801 negative side lead (unsolder) to IC801 pin ①.

4-1. SAP-BPF adjustment

(1) Input a 62.94 kHz 0.42 Vp-p sine wave to IC801 pin ①.
(2) Adjust RV802 so that IC801 pin ⑥ output is minimum.
(3) Set the frequency to 78.67 kHz and confirm that IC801 pin ㊲ output is less than 30 mVp-p.

4-2. Stereo VCO adjustment

(1) Short the IC801 pin ① to ground with a chemical capacitor.
(2) Connect a frequency counter to IC801 pin ㉜ and adjust RV805 so that the frequency is 62.94 ±0.1 kHz.

4-3. SAP VCO adjustment

(1) Select an illegal channel (channel 0, etc.) to make MUTE high and read IC801 pin ㉕ DC voltage VM (3.4 ± 0.3V).
(2) Input a 78.67 kHz 0.42 Vp-p to IC801 pin ① and adjust RV803 so that IC801 pin ㉕ DC voltage is VM ± 0.1V.

4-4. Pilot cancel adjustment

(1) Input a 15.75 kHz 0.14 Vp-p to IC801 pin ①.
(2) Adjust RV804 so that IC801 pin ㊵ output 15.75 kHz output is minimum. (If it is turned too much, output will become zero and operation will be mono.)

4-5. Output level check

Input a 300 Hz 0.7 Vp-p to IC801 pin ①. Check CN106 pin ① output V_L and ② output V_R. $V_L = 400 \pm 40$ mVrms. $V_R = V_L \pm 25$ mVrms.

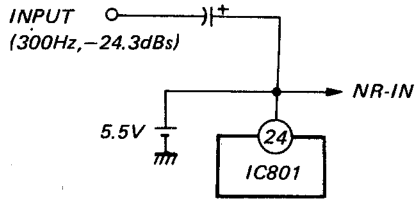
5. Noise Reduction Adjustment (MP-7 board)

5-1. Time constant adjustment

Adjust RV830 so that the voltage drop at both sides of R839 is 15 ± 1 mVp-p.

5-2. Variable de-emphasis adjustment

(1) Set RV832 to mechanical center.
(2) Apply 5.5 V bias to IC801 pin ㉔, cut DC with a capacitor and input 300 Hz −24.3 dBs.



(3) Adjust RV831 so that CN106 pin ① and ② output is $V_L/7$ ±5 mV, and read IC830 pin ⑦ output Va.
(4) In the same way, input 8 kHz −17.2 dBs and adjust RV831 so that IC830 pin ⑦ output is Va −11.3 dBs.